Appendix D

(Continued)

Groundwater and Soil Analytical Reports
(includes Golder Associates Historical Reports)

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170885-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:31:56 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Job ID: 240-170885-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170885-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170885-1	TRIP BLANK_15	Water	08/01/22 00:00	08/03/22 09:45
240-170885-2	MW-94S_080122	Water	08/01/22 11:10	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Client Sample ID: TRIP BLANK_15 — Lab Sample ID: 240-170885-1

No Detections.

Client Sample ID: MW-94S_080122 — Lab Sample ID: 240-170885-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Client Sample ID: TRIP BLANK_15

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170885-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:34*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/05/22 13:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/05/22 13:34*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Client Sample ID: MW-94S_080122

Date Collected: 08/01/22 11:10
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170885-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/05/22 18:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 15:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 15:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 15:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 15:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/05/22 15:39*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/05/22 15:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 15:39*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 15:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170885-1	TRIP BLANK_15	97	90	97	100
240-170885-2	MW-94S_080122	100	87	98	101
240-170891-A-2 MS	Matrix Spike	94	98	98	100
240-170891-C-2 MSD	Matrix Spike Duplicate	94	102	99	99
LCS 240-537713/4	Lab Control Sample	93	96	99	100
MB 240-537713/7	Method Blank	97	88	96	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170885-2	MW-94S_080122	80
240-170886-F-2 MS	Matrix Spike	80
240-170886-F-2 MSD	Matrix Spike Duplicate	83
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537713/7
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:09*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 13:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 13:09*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:09*	*1*

Lab Sample ID: LCS 240-537713/4
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.4		ug/L		113	63 - 134
cis-1,2-Dichloroethene	25.0	25.6		ug/L		102	77 - 123
Tetrachloroethene	25.0	27.3		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122
Vinyl chloride	12.5	9.78		ug/L		78	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	17.3		ug/L		69	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	18.0		ug/L		72	66 - 128
Tetrachloroethene	1.0	U F1	25.0	12.8	F1	ug/L		51	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	16.9		ug/L		68	56 - 136
Trichloroethene	1.0	U F1	25.0	14.4	F1	ug/L		57	61 - 124
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-C-2 MSD
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	19.0		ug/L		76	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	25.0	18.5		ug/L		74	66 - 128	3	14
Tetrachloroethene	1.0	U F1	25.0	14.8	F1	ug/L		59	62 - 131	15	20
trans-1,2-Dichloroethene	1.0	U	25.0	17.9		ug/L		71	56 - 136	6	15
Trichloroethene	1.0	U F1	25.0	15.5		ug/L		62	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	15.5		ug/L		124	43 - 157	24	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

GC/MS VOA

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170885-2	MW-94S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-170886-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 537713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170885-1	TRIP BLANK_15	Total/NA	Water	8260D	
240-170885-2	MW-94S_080122	Total/NA	Water	8260D	
MB 240-537713/7	Method Blank	Total/NA	Water	8260D	
LCS 240-537713/4	Lab Control Sample	Total/NA	Water	8260D	
240-170891-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-170891-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Client Sample ID: TRIP BLANK_15

Lab Sample ID: 240-170885-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 13:34	SAM	EETNC CAN

Client Sample ID: MW-94S_080122

Lab Sample ID: 240-170885-2

Date Collected: 08/01/22 11:10

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 15:39	SAM	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 18:19	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170885-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinshaw	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinshaw@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaitis	TAT if different from below: 10 day (✓) 2 weeks / 1 week / 2 days / 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
6 TRIP BLANK 15	8/1/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-94s-080122	8/1/22	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170885 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 1680 Boston Post side Yard
Submit all results through Calscience at paralabs@calscience.com Cc: Caitlin Weber
Level IV Reporting required.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaitis	Arcadis	8/1/22 1540	Arcadis Cold Storage	Arcadis	08/1/22 1540
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 / 947		EETA	8/2/22 / 947
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/2/22 950		EETA	8/3/22 945

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170885

Eurofins - Canton Sample Receipt Form/Narrative Login # : 170885
Barberton Facility

Client Acadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	Yes	No
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 810420L6	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

CK 8.3.22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 09, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170885-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-09
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170885-1

		Sample Name:	TRIP BLANK_15				MW-94S_080122			
		Lab Sample ID:	2401708851				2401708852			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

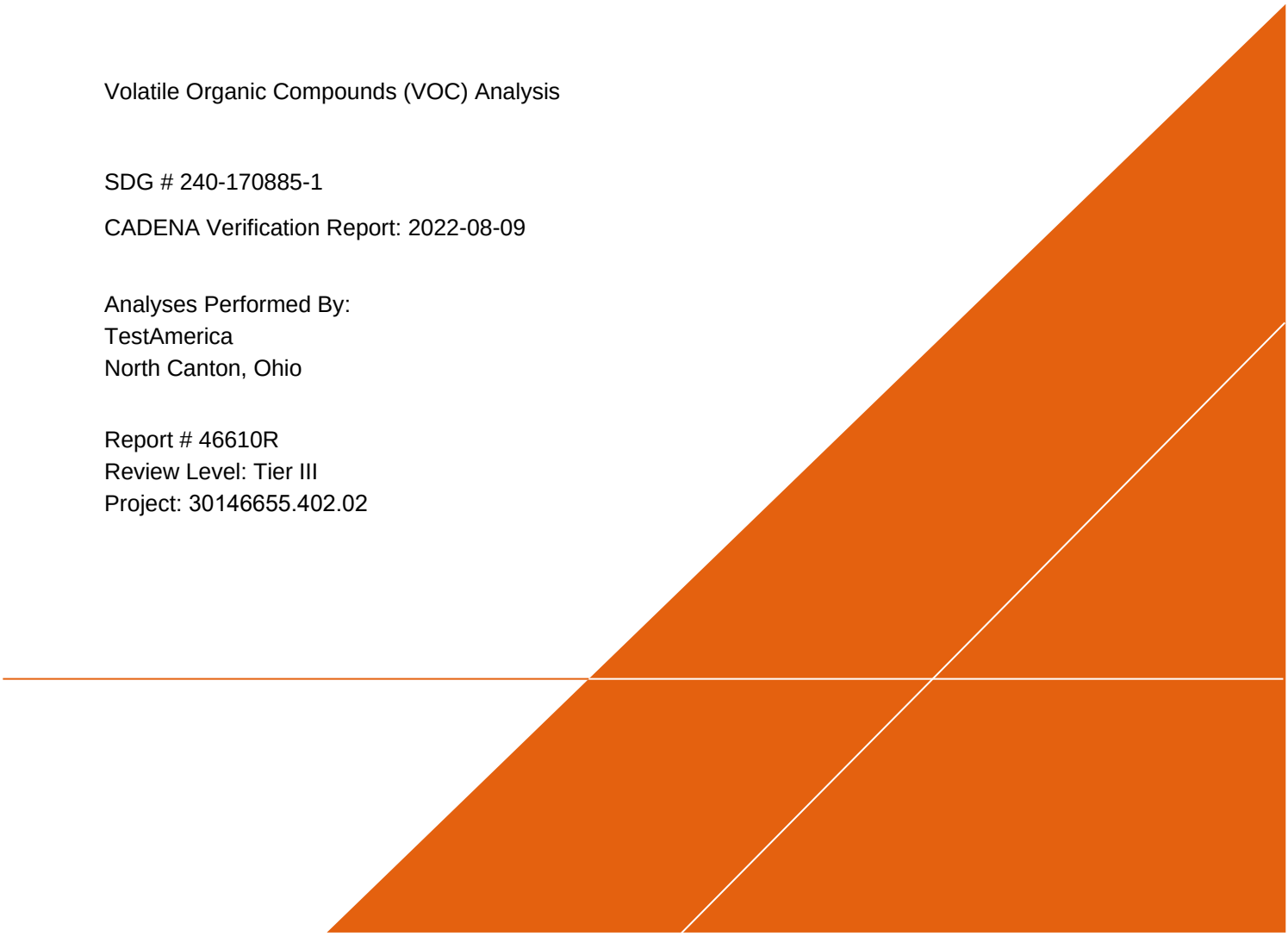
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170885-1

CADENA Verification Report: 2022-08-09

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46610R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170885-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_15	240-170885-1	Water	08/01/22		X	
MW-94S_080122	240-170885-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 12, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskes	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskes@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client:
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day (✓) 2 weeks, 1 week, 2 days, 1 day		Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: 125HDPE	HNO3	HCl	NaOH	Zinc Acetate	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
6 TRIP BLANK 15	8/1/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-94s-080122	8/1/22	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170685 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11680 Boston Post side Yard

Submit all results through Caders at jonathan.caders@arcadis.com, Caders@arcadis.com

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	8/1/2022 1540	Arcadis Cold Storage	Arcadis	08/1/22 1540
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 / 947		EETA	8/2/22 / 947
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/2/22 950		EETA	8/3/22 945

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08/09/2022

Client Sample ID: TRIP BLANK_15
Lab Sample ID: 240-170885-1
Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:34*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/05/22 13:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/05/22 13:34*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:34*	*1*

Client Sample ID: MW-94S_080122
Lab Sample ID: 240-170885-2
Date Collected: 08/01/22 11:10
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/05/22 18:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 15:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 15:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 15:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 15:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/05/22 15:39*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/05/22 15:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 15:39*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 15:39*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170864-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:30:28 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-170864-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170864-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) for analytical batch 537536 exceeded control criteria for Vinyl Chloride. The samples associated with this CCV were non-detect for the affected analyte. In accordance with the laboratory SOP, a low level CCV at the reporting limit (labeled as an MRL) was analyzed and the affected compound was detected; therefore the data has been reported. No further corrective action was required: TRIP BLANK_07 (240-170864-1) and MW-172S_080122 (240-170864-2).

Method 8260D: NO MS/MSD in batch 537536 due to an instrument fault: TRIP BLANK_07 (240-170864-1) and MW-172S_080122 (240-170864-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170864-1	TRIP BLANK_07	Water	08/01/22 00:00	08/03/22 09:45
240-170864-2	MW-172S_080122	Water	08/01/22 12:35	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Client Sample ID: TRIP BLANK_07 — Lab Sample ID: 240-170864-1

No Detections.

Client Sample ID: MW-172S_080122 — Lab Sample ID: 240-170864-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Client Sample ID: TRIP BLANK_07

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170864-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/04/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/04/22 15:53*	*1*
Toluene-d8 (Surr)	*113*		*78 - 122*		*08/04/22 15:53*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/04/22 15:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Client Sample ID: MW-172S_080122
Date Collected: 08/01/22 12:35
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170864-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/05/22 16:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 16:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 16:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 16:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 16:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 16:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/04/22 16:21*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*08/04/22 16:21*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*08/04/22 16:21*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/04/22 16:21*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170864-1	TRIP BLANK_07	104	105	113	111
240-170864-2	MW-172S_080122	105	100	107	108
LCS 240-537536/5	Lab Control Sample	92	115	115	101
MB 240-537536/8	Method Blank	104	104	108	107

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170864-2	MW-172S_080122	83
240-170886-F-2 MS	Matrix Spike	80
240-170886-F-2 MSD	Matrix Spike Duplicate	83
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537536/8
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 14:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 14:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 14:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 14:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/04/22 14:31*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 14:31*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 14:31*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/04/22 14:31*	*1*

Lab Sample ID: LCS 240-537536/5
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.7		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	22.1		ug/L		110	76 - 123
trans-1,2-Dichloroethene	20.0	19.9		ug/L		100	75 - 124
Trichloroethene	20.0	20.1		ug/L		101	70 - 122
Vinyl chloride	20.0	14.7		ug/L		74	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

GC/MS VOA

Analysis Batch: 537536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170864-1	TRIP BLANK_07	Total/NA	Water	8260D	
240-170864-2	MW-172S_080122	Total/NA	Water	8260D	
MB 240-537536/8	Method Blank	Total/NA	Water	8260D	
LCS 240-537536/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170864-2	MW-172S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-170886-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Client Sample ID: TRIP BLANK_07

Lab Sample ID: 240-170864-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 15:53	LEE	EETNC CAN

Client Sample ID: MW-172S_080122

Lab Sample ID: 240-170864-2

Date Collected: 08/01/22 12:35

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 16:21	LEE	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 16:20	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170864-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 120

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Skaria	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_07	8/1/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-172S-080122	08/01/22	1235		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170864 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1701 Boston Post front yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Skaria	Arcadis	08/01/22 1540	Arcadis Cold Storage	Arcadis	08/01/22 1540
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 0947		TEKTA	8/2/22 0948
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	TEKTA	8/2/22 950		TEKTA	8/3/22 945

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 170860
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 8/3/22 Opened on 8/3/22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 81042016	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

CK 8.3.22 8.3.22

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 09, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170864-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-09
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers and MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170864-1

		Sample Name:	TRIP BLANK_07				MW-172S_080122			
		Lab Sample ID:	2401708641				2401708642			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171142-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 2:13:25 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171142-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171142-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-121S_080322 (240-171142-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171142-1	TRIP BLANK_52	Water	08/03/22 00:00	08/06/22 10:00
240-171142-2	MW-121S_080322	Water	08/03/22 10:10	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Client Sample ID: TRIP BLANK_52 — Lab Sample ID: 240-171142-1

No Detections.

Client Sample ID: MW-121S_080322 — Lab Sample ID: 240-171142-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Client Sample ID: TRIP BLANK_52

Date Collected: 08/03/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171142-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/10/22 13:51*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 13:51*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 13:51*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/10/22 13:51*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Client Sample ID: MW-121S_080322

Date Collected: 08/03/22 10:10
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171142-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*08/10/22 15:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 18:12*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 18:12*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 18:12*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 18:12*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171142-1	TRIP BLANK_52	102	97	104	107
240-171142-2	MW-121S_080322	104	97	104	110
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171142-2	MW-121S_080322	94
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171142-2	MW-121S_080322	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171142-1	TRIP BLANK_52	Total/NA	Water	8260D	
240-171142-2	MW-121S_080322	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Client Sample ID: TRIP BLANK_52

Lab Sample ID: 240-171142-1

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 13:51

Client Sample ID: MW-121S_080322

Lab Sample ID: 240-171142-2

Date Collected: 08/03/22 10:10

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 18:12
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 15:24

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171142-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaviga	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_52	8/3/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-12s_080322	08/03/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171142 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11710 Beaufort Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaviga	Arcadis	08/04/22/1620	Arcadis Cold Storage	Arcadis	08/04/22/1160
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000	J. Hall	EETA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
J. Hall	EETA	8/5/22 1030			

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171142
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171142

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171142-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171142-1

		Sample Name:	TRIP BLANK_52				MW-121S_080322			
		Lab Sample ID:	2401711421				2401711422			
		Sample Date:	8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

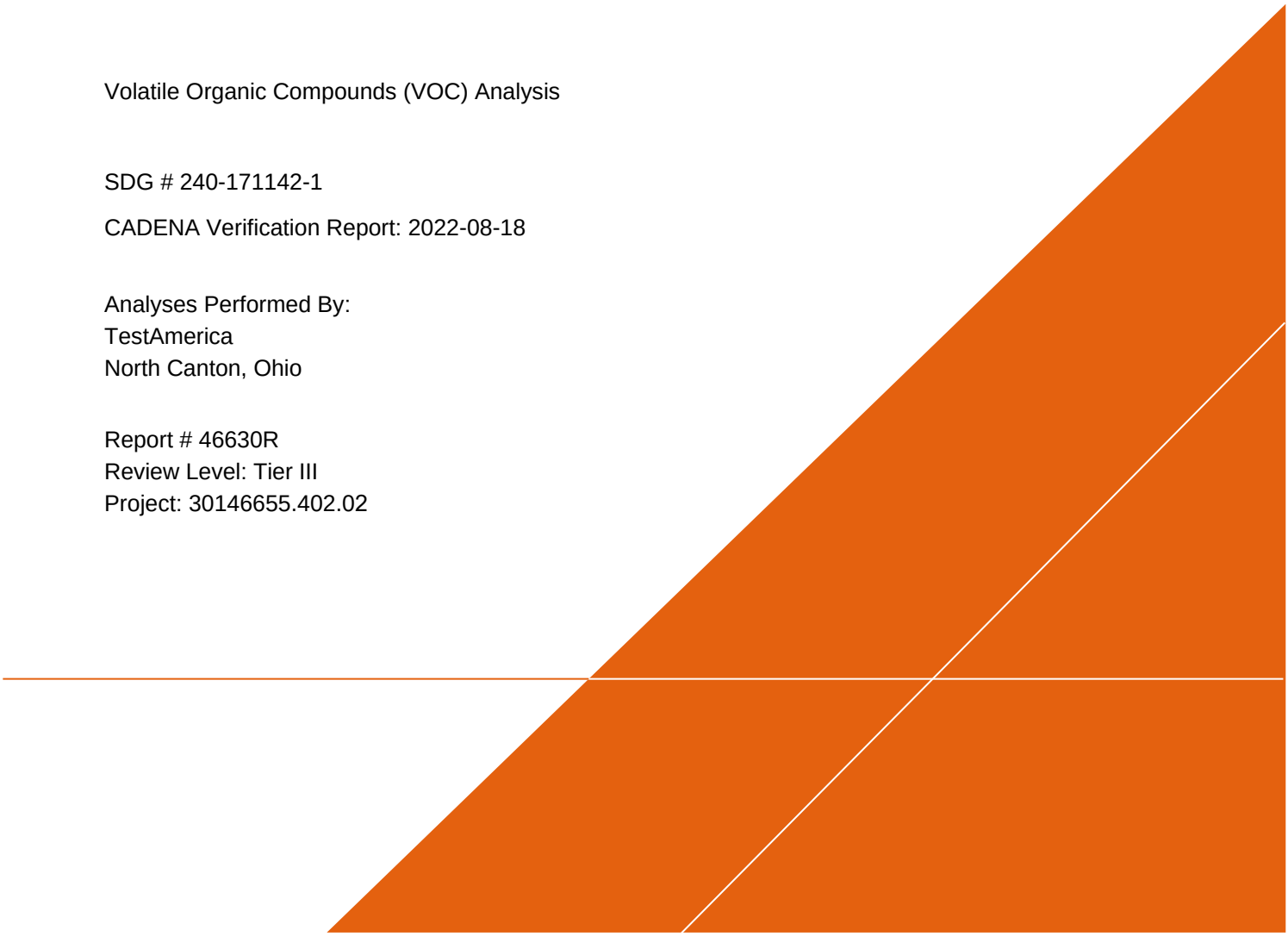
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171142-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46630R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171142-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_52	240-171142-1	Water	08/03/22		X	
MW-121S_080322	240-171142-2	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukavia	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 52	8/3/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-12s_080322	08/03/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171142 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11710 Beaufort Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukavia	Arcadis	08/04/22/1620	Arcadis Cold Storage	Arcadis	08/04/22 1160
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/5/22 1000	J. Hall	EETA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Hall	EETA	8/5/22 1030			

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Client Sample ID: TRIP BLANK_52
Lab Sample ID: 240-171142-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/10/22 13:51*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 13:51*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 13:51*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/10/22 13:51*	*1*

Client Sample ID: MW-121S_080322
Lab Sample ID: 240-171142-2
Date Collected: 08/03/22 10:10
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*08/10/22 15:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 18:12*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 18:12*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 18:12*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 18:12*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170887-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:45:39 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Job ID: 240-170887-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170887-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170887-1	TRIP BLANK_28	Water	08/01/22 00:00	08/03/22 09:45
240-170887-2	MW-173S_080122	Water	08/01/22 14:00	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Client Sample ID: TRIP BLANK_28 — Lab Sample ID: 240-170887-1

No Detections.

Client Sample ID: MW-173S_080122 — Lab Sample ID: 240-170887-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Client Sample ID: TRIP BLANK_28

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170887-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 14:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 14:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 14:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 14:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 14:24*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/05/22 14:24*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 14:24*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 14:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Client Sample ID: MW-173S_080122
Date Collected: 08/01/22 14:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170887-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 21:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 16:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 16:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 16:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 16:29*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 16:29*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/05/22 16:29*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 16:29*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170887-1	TRIP BLANK_28	99	85	98	100
240-170887-2	MW-173S_080122	99	88	99	101
240-170891-A-2 MS	Matrix Spike	94	98	98	100
240-170891-C-2 MSD	Matrix Spike Duplicate	94	102	99	99
LCS 240-537713/4	Lab Control Sample	93	96	99	100
MB 240-537713/7	Method Blank	97	88	96	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170886-F-2 MS	Matrix Spike	80
240-170886-F-2 MSD	Matrix Spike Duplicate	83
240-170887-2	MW-173S_080122	81
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537713/7
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:09*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 13:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 13:09*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:09*	*1*

Lab Sample ID: LCS 240-537713/4
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.4		ug/L		113	63 - 134
cis-1,2-Dichloroethene	25.0	25.6		ug/L		102	77 - 123
Tetrachloroethene	25.0	27.3		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122
Vinyl chloride	12.5	9.78		ug/L		78	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	17.3		ug/L		69	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	18.0		ug/L		72	66 - 128
Tetrachloroethene	1.0	U F1	25.0	12.8	F1	ug/L		51	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	16.9		ug/L		68	56 - 136
Trichloroethene	1.0	U F1	25.0	14.4	F1	ug/L		57	61 - 124
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-C-2 MSD
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	19.0		ug/L		76	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	25.0	18.5		ug/L		74	66 - 128	3	14
Tetrachloroethene	1.0	U F1	25.0	14.8	F1	ug/L		59	62 - 131	15	20
trans-1,2-Dichloroethene	1.0	U	25.0	17.9		ug/L		71	56 - 136	6	15
Trichloroethene	1.0	U F1	25.0	15.5		ug/L		62	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	15.5		ug/L		124	43 - 157	24	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

GC/MS VOA

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170887-2	MW-173S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-170886-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 537713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170887-1	TRIP BLANK_28	Total/NA	Water	8260D	
240-170887-2	MW-173S_080122	Total/NA	Water	8260D	
MB 240-537713/7	Method Blank	Total/NA	Water	8260D	
LCS 240-537713/4	Lab Control Sample	Total/NA	Water	8260D	
240-170891-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-170891-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Client Sample ID: TRIP BLANK_28

Lab Sample ID: 240-170887-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 14:24	SAM	EETNC CAN

Client Sample ID: MW-173S_080122

Lab Sample ID: 240-170887-2

Date Collected: 08/01/22 14:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 16:29	SAM	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 21:51	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170887-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sam Sukaitis	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_28	8/1/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-173s-080122	8/01/22	1400		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170887 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1172 Boston Post Back yard

Submit all results through Cadena at jtomana@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaitis	Arcadis	08/01/22 1540	Arcadis Cold Storage	Arcadis	08/01/22 1540
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 / 947	Jeri Hale	EEGt	8/2/22 / 948
Relinquished by: Jeri Hale	Company: EEGt	Date/Time: 8/2/22 950	Received in Laboratory by:	Company: EEGt	Date/Time: 8/2/22 945

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170887

Eurofins - Canton Sample Receipt Form/Narrative Login # : ~~170860~~
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 810420/6	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

CK 8.3.22 8.3.22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 10, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170887-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-10
Number of Samples:2
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers:
GCMS VOC QC batch 537713.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170887-1

		Sample Name:	TRIP BLANK_28				MW-173S_080122			
		Lab Sample ID:	2401708871				2401708872			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

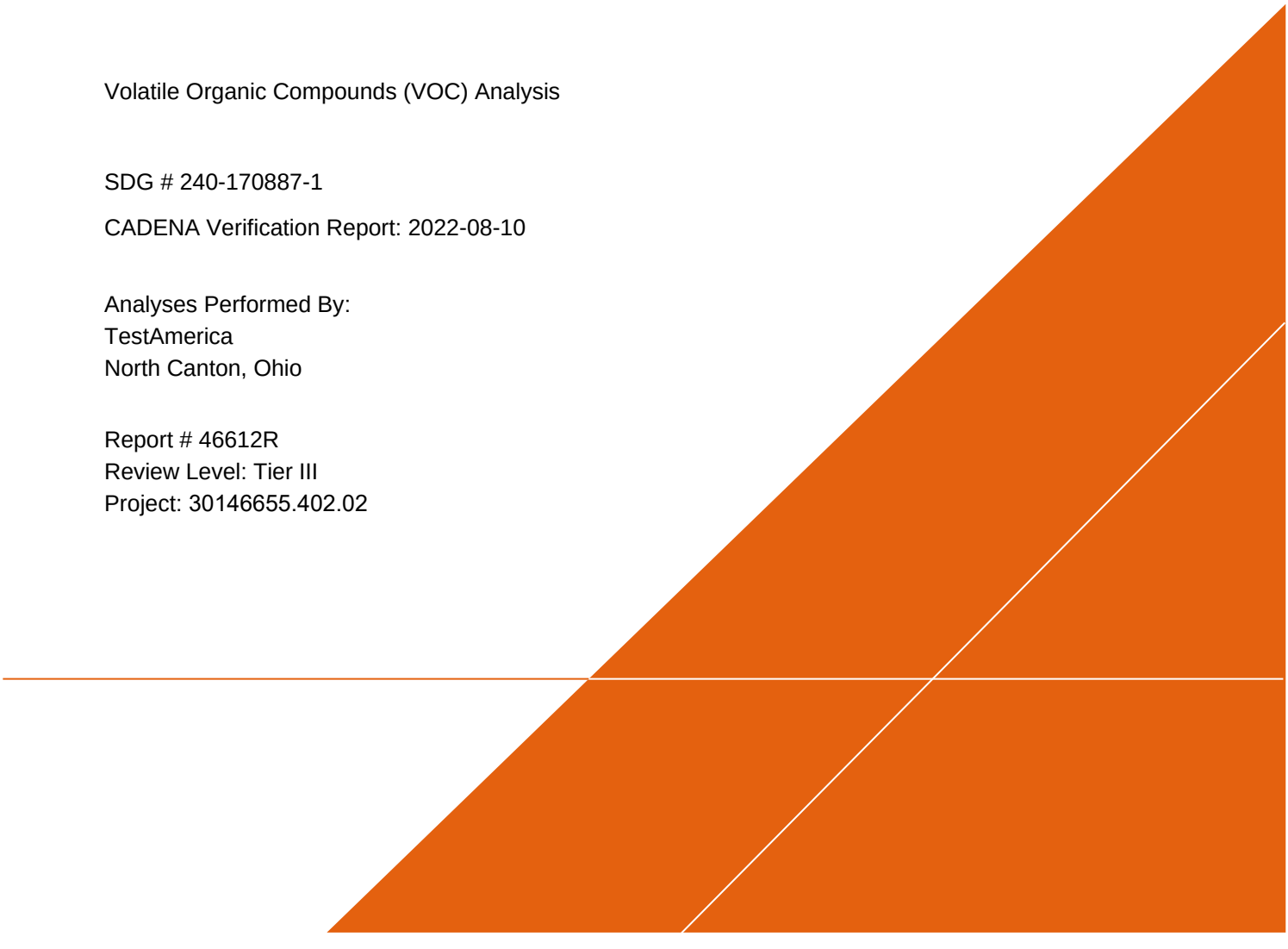
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170887-1

CADENA Verification Report: 2022-08-10

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46612R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170887-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_28	240-170887-1	Water	08/01/22		X	
MW-173S_080122	240-170887-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 12, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_28	8/1/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-173s-080122	08/01/22	1400		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170887 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1721 Boston Post Back yard

Submit all results through Cadena at jtomana@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/01/22 1540	Arcadis Cold Storage	Arcadis	08/01/22 1540
	ARCADIS	8/2/22 / 947	Jen Hale	EEGt	8/2/22 / 948
Jen Hale	EEGt	8/2/22 950		EGT	8/2/22 945

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08/09/2022

Client Sample ID: TRIP BLANK_28
Lab Sample ID: 240-170887-1
Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 14:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 14:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 14:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 14:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 14:24*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/05/22 14:24*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 14:24*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 14:24*	*1*

Client Sample ID: MW-173S_080122
Lab Sample ID: 240-170887-2
Date Collected: 08/01/22 14:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 21:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 16:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 16:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 16:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 16:29*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 16:29*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/05/22 16:29*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 16:29*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171938-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 9:08:07 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Job ID: 240-171938-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171938-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171938-1	TRIP BLANK_171	Water	08/19/22 00:00	08/23/22 09:30
240-171938-2	MW-93S_081922	Water	08/19/22 12:00	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Client Sample ID: TRIP BLANK_171 — Lab Sample ID: 240-171938-1

No Detections.

Client Sample ID: MW-93S_081922 — Lab Sample ID: 240-171938-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Client Sample ID: TRIP BLANK_171

Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171938-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 15:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 15:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 15:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 15:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 15:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 15:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/24/22 15:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/24/22 15:14*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/24/22 15:14*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/24/22 15:14*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Client Sample ID: MW-93S_081922

Date Collected: 08/19/22 12:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171938-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 03:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/27/22 03:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/24/22 18:47*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/24/22 18:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/24/22 18:47*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/24/22 18:47*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171854-C-5 MS	Matrix Spike	87	92	95	92
240-171854-C-5 MSD	Matrix Spike Duplicate	89	94	96	93
240-171938-1	TRIP BLANK_171	97	94	101	101
240-171938-2	MW-93S_081922	97	92	97	101
LCS 240-539996/5	Lab Control Sample	95	102	106	99
MB 240-539996/8	Method Blank	98	97	102	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171938-2	MW-93S_081922	89
240-171972-G-3 MS	Matrix Spike	88
240-171972-M-3 MSD	Matrix Spike Duplicate	87
LCS 240-540388/3	Lab Control Sample	92
MB 240-540388/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539996/8
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/24/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/24/22 13:39*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/24/22 13:39*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/24/22 13:39*	*1*

Lab Sample ID: LCS 240-539996/5
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.9		ug/L		91	77 - 123
Tetrachloroethene	25.0	28.6		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	25.9		ug/L		104	70 - 122
Vinyl chloride	25.0	20.7		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171854-C-5 MS
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	313	285		ug/L		91	56 - 135
cis-1,2-Dichloroethene	120		313	391		ug/L		87	66 - 128
Tetrachloroethene	13	U	313	345		ug/L		110	62 - 131
trans-1,2-Dichloroethene	13	U	313	275		ug/L		88	56 - 136
Trichloroethene	13	U	313	300		ug/L		96	61 - 124
Vinyl chloride	280		313	501		ug/L		71	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171854-C-5 MS
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-171854-C-5 MSD
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	313	269		ug/L		86	56 - 135	6	26
cis-1,2-Dichloroethene	120		313	386		ug/L		86	66 - 128	1	14
Tetrachloroethene	13	U	313	344		ug/L		110	62 - 131	0	20
trans-1,2-Dichloroethene	13	U	313	276		ug/L		88	56 - 136	0	15
Trichloroethene	13	U	313	297		ug/L		95	61 - 124	1	15
Vinyl chloride	280		313	494		ug/L		69	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540388/4
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 18:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/26/22 18:32*	*1*

Lab Sample ID: LCS 240-540388/3
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*

Lab Sample ID: 240-171972-G-3 MS
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

Lab Sample ID: 240-171972-M-3 MSD
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.5		ug/L		115	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

GC/MS VOA

Analysis Batch: 539996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171938-1	TRIP BLANK_171	Total/NA	Water	8260D	
240-171938-2	MW-93S_081922	Total/NA	Water	8260D	
MB 240-539996/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539996/5	Lab Control Sample	Total/NA	Water	8260D	
240-171854-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-171854-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171938-2	MW-93S_081922	Total/NA	Water	8260D SIM	
MB 240-540388/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540388/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171972-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171972-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Client Sample ID: TRIP BLANK_171

Lab Sample ID: 240-171938-1

Date Collected: 08/19/22 00:00

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 15:14

Client Sample ID: MW-93S_081922

Lab Sample ID: 240-171938-2

Date Collected: 08/19/22 12:00

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 18:47
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 03:49

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_171	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-935_081922	8/19/22	1200		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171938 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11775 Boston Post St.

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/19/22 1350	VONI COLDSTORAGE	ARCADIS	8/19/22 1350
[signature]	ARCADIS	8/22/22 1120	[signature]	Eurofins	8/22/22 1120
[signature]	Eurofins	8/22/22	[signature]	EOTNL	8.23.22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hrudel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 04, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171938-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-04
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171938-1

		Sample Name:	TRIP BLANK_171				MW-93S_081922			
		Lab Sample ID:	2401719381				2401719382			
		Sample Date:	8/19/2022				8/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

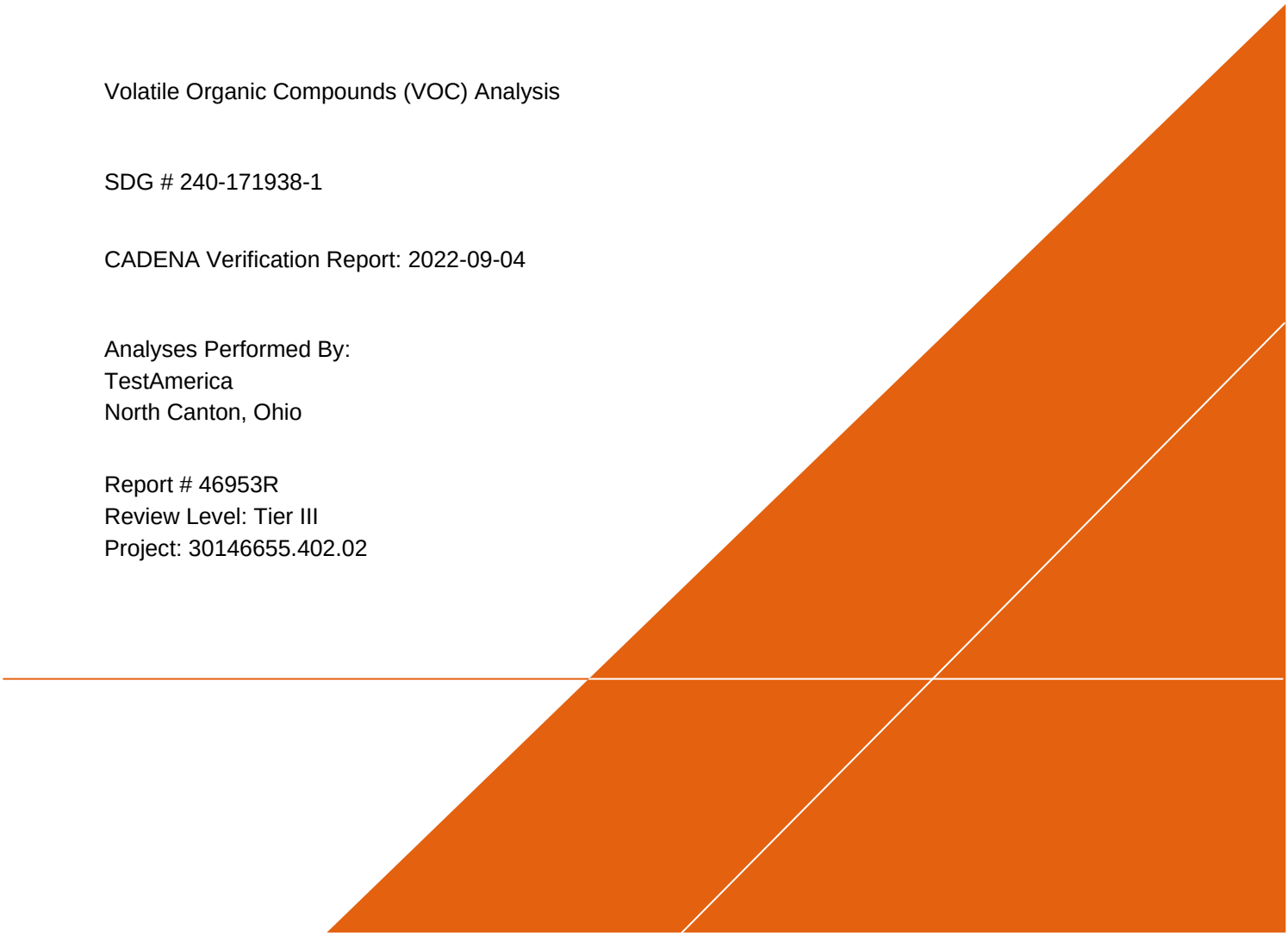
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171938-1

CADENA Verification Report: 2022-09-04

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46953R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171938-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_171	240-171938-1	Water	08/19/22		X	
MW-93S_081922	240-171938-2	Water	08/19/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_171	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-935_081922	8/19/22	1200		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171938 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11775 Boston Post St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/19/22 1350	NON COLD STORAGE	ARCADIS	8/19/22 1350
Relinquished by: [signature]	Company: ARCADIS	Date/Time: 8/22/22 1120	Received by: [signature]	Company: Eurofins	Date/Time: 8/22/22 1120
Relinquished by: [signature]	Company: Eurofins	Date/Time: 8/22/22	Received in Laboratory by: [signature]	Company: EOTNL	Date/Time: 8.23.22 9:30

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Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Client Sample ID: TRIP BLANK_171

Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171938-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 15:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 15:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 15:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 15:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 15:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 15:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/24/22 15:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/24/22 15:14*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/24/22 15:14*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/24/22 15:14*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171938-1

Client Sample ID: MW-93S_081922

Date Collected: 08/19/22 12:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171938-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 03:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/27/22 03:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/24/22 18:47*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/24/22 18:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/24/22 18:47*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/24/22 18:47*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171397-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 1:46:23 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Job ID: 240-171397-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171397-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 3.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171397-1	TRIP BLANK_73	Water	08/09/22 00:00	08/11/22 09:30
240-171397-2	MW-176S_080922	Water	08/09/22 11:00	08/11/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Client Sample ID: TRIP BLANK_73 — Lab Sample ID: 240-171397-1

No Detections.

Client Sample ID: MW-176S_080922 — Lab Sample ID: 240-171397-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Client Sample ID: TRIP BLANK_73
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171397-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 15:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 15:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 15:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/12/22 15:19*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/12/22 15:19*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 15:19*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/12/22 15:19*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Client Sample ID: MW-176S_080922

Date Collected: 08/09/22 11:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171397-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 06:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/13/22 06:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 20:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 20:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 20:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/12/22 20:20*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/12/22 20:20*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 20:20*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 20:20*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171397-1	TRIP BLANK_73	95	91	95	83
240-171397-2	MW-176S_080922	90	93	95	81
240-171402-D-3 MS	Matrix Spike	88	95	95	83
240-171402-G-3 MSD	Matrix Spike Duplicate	89	98	97	81
LCS 240-538724/4	Lab Control Sample	90	97	96	85
MB 240-538724/6	Method Blank	95	94	97	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171299-I-3 MS	Matrix Spike	91
240-171299-O-3 MSD	Matrix Spike Duplicate	90
240-171397-2	MW-176S_080922	88
LCS 240-538760/3	Lab Control Sample	89
MB 240-538760/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538724/6
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 14:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 14:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 14:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 14:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/12/22 14:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 14:29*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/12/22 14:29*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 14:29*	*1*

Lab Sample ID: LCS 240-538724/4
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.6		ug/L		91	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	22.7		ug/L		91	70 - 122
Vinyl chloride	12.5	12.2		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	18.4		ug/L		74	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	56 - 136
Trichloroethene	1.0	U	25.0	19.5		ug/L		78	61 - 124
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Lab Sample ID: 240-171402-G-3 MSD
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	66 - 128	9	14
Tetrachloroethene	1.0	U	25.0	19.6		ug/L		78	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	8	15
Trichloroethene	1.0	U	25.0	20.8		ug/L		83	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538760/4
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 21:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 21:10*	*1*

Lab Sample ID: LCS 240-538760/3
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171299-I-3 MS
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.99		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171299-O-3 MSD
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.83		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

GC/MS VOA

Analysis Batch: 538724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171397-1	TRIP BLANK_73	Total/NA	Water	8260D	
240-171397-2	MW-176S_080922	Total/NA	Water	8260D	
MB 240-538724/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538724/4	Lab Control Sample	Total/NA	Water	8260D	
240-171402-D-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171402-G-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171397-2	MW-176S_080922	Total/NA	Water	8260D SIM	
MB 240-538760/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538760/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171299-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171299-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Client Sample ID: TRIP BLANK_73

Lab Sample ID: 240-171397-1

Date Collected: 08/09/22 00:00

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 15:19

Client Sample ID: MW-176S_080922

Lab Sample ID: 240-171397-2

Date Collected: 08/09/22 11:00

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 20:20
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 06:51

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 73	8/9/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-176s_080922	8/09/22	1100		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171397 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11845 Boston Post front yard

Submit all results through Cadena at ykomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/09/22/1205	Arcadis Cold Stor	Arcadis	08/09/22/1720
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/10/22 0935	Jei Hall	EETA	8/10/22 0935
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jei Hall	EETA	8/10/22 938		EENC	8-11-22 930

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Matt

Cooler Received on 8-11-22 Opened on 8-11-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.7	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	3.0	3.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171397-1
Sample date: 2022-08-09
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171397-1

		Sample Name:	TRIP BLANK_73				MW-176S_080922			
		Lab Sample ID:	2401713971				2401713972			
		Sample Date:	8/9/2022				8/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171397-1

		Sample Name:	TRIP BLANK_73				MW-176S_080922			
		Lab Sample ID:	2401713971				2401713972			
		Sample Date:	8/9/2022				8/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

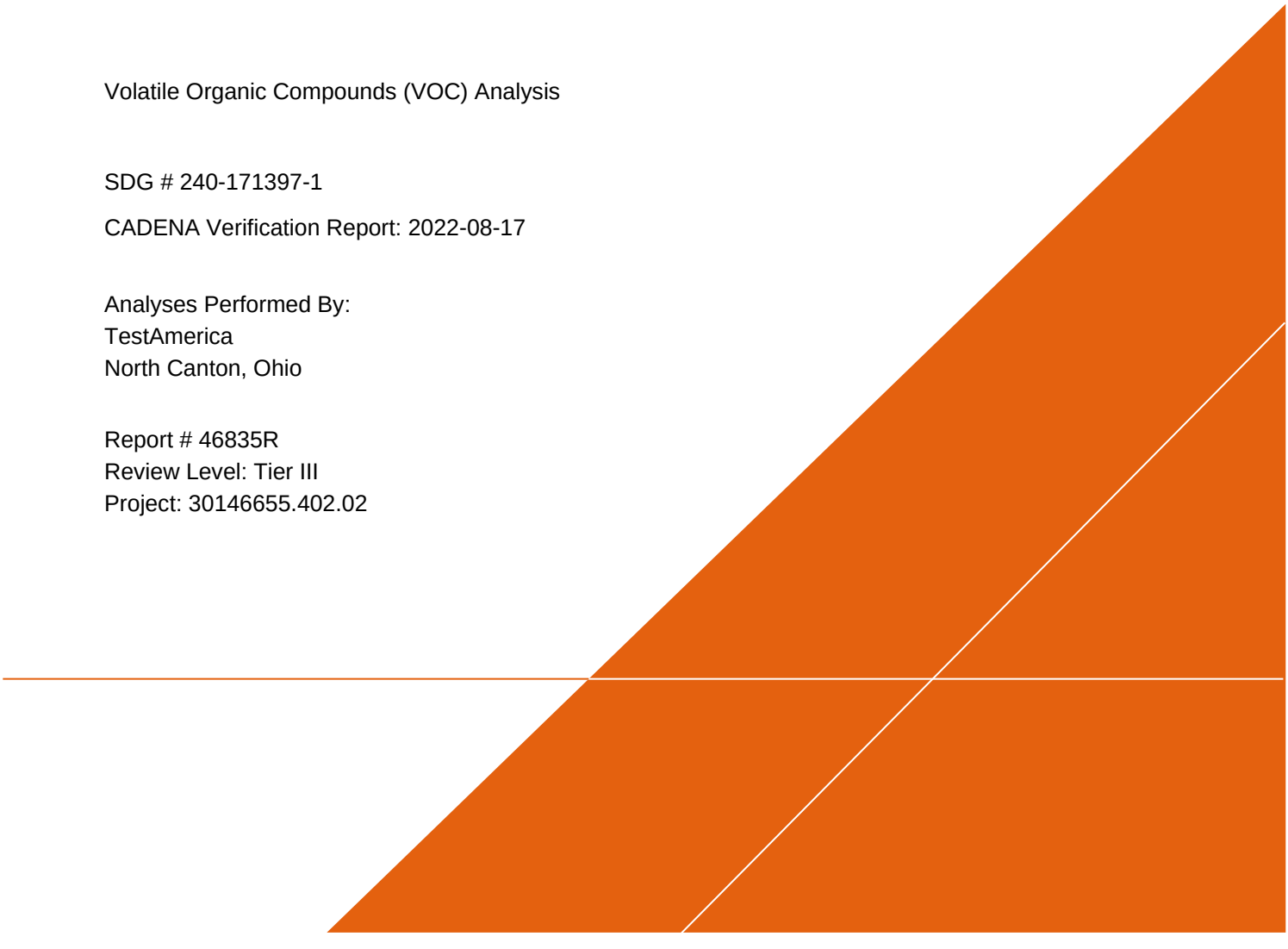
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171397-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46835R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171397-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_73	240-171397-1	Water	08/09/22		X	
MW-176S_080922	240-171397-2	Water	08/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10449 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christine Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7438	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukerig	TAT if different from Below: 10 day — 2 weeks, 1 week, 3 days, 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air, Aqueous, Sediment, Solid, Other	Containers & Preservatives: HCl, Other	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Analyses: 8260D, 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_73	8/9/22	—	Aqueous: 1	HCl: 1	N	G	X X X X X X	1 Trip Blank
MW-176-080922	8/9/22	1100	Aqueous: 6	HCl: 6	N	G	X X X X X X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171387 Chain of Custody

Possible Hazard Identification: Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client, Disposal By Lab, Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Approval: 11845 Rush 2 Fast Fwd YNN
Send all results through Calscience (Calscience WO# 18E2383)

Sam Sukerig	Company: Arcadis	Date/Time: 08/09/22/1205	Received by: Arcadis Cooler pickup	Company: Arcadis	Date/Time: 08/09/22/1205
Christine Weaver	Company: ARCADIS	Date/Time: 8/10/22 0935	Received by: Jen Hall	Company: FEDEX	Date/Time: 8/10/22 0935
Jen Hall	Company: FEDEX	Date/Time: 8/10/22 938	Received in Laboratory by:	Company: FEDEX	Date/Time: 8-11-22 930

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Client Sample ID: TRIP BLANK_73
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171397-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 15:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 15:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 15:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/12/22 15:19*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/12/22 15:19*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 15:19*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/12/22 15:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171397-1

Client Sample ID: MW-176S_080922
Date Collected: 08/09/22 11:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171397-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 06:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/13/22 06:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 20:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 20:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 20:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/12/22 20:20*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/12/22 20:20*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 20:20*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 20:20*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171511-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:42:37 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171511-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171511-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method 8260D: No MS/MSD in batch 538924 due to an incorrect dilution: TRIP BLANK_134 (240-171511-1) and MW-178S_081022 (240-171511-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171511-1	TRIP BLANK_134	Water	08/10/22 00:00	08/13/22 09:45
240-171511-2	MW-178S_081022	Water	08/10/22 10:30	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Client Sample ID: TRIP BLANK_134 — Lab Sample ID: 240-171511-1

No Detections.

Client Sample ID: MW-178S_081022 — Lab Sample ID: 240-171511-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Client Sample ID: TRIP BLANK_134
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171511-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 16:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 16:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 16:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/15/22 16:44*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 16:44*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/15/22 16:44*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 16:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Client Sample ID: MW-178S_081022
Date Collected: 08/10/22 10:30
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171511-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 05:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/16/22 05:48*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 17:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 17:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 17:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/15/22 17:06*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 17:06*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 17:06*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/15/22 17:06*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171511-1	TRIP BLANK_134	112	105	104	102
240-171511-2	MW-178S_081022	109	105	102	100
LCS 240-538924/5	Lab Control Sample	108	107	105	105
MB 240-538924/8	Method Blank	109	104	102	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171412-J-2 MS	Matrix Spike	89
240-171412-P-2 MSD	Matrix Spike Duplicate	86
240-171511-2	MW-178S_081022	85
LCS 240-538971/3	Lab Control Sample	85
MB 240-538971/4	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538924/8
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/15/22 15:38*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 15:38*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 15:38*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 15:38*	*1*

Lab Sample ID: LCS 240-538924/5
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.1		ug/L		106	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	20.0		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538971/4
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/15/22 20:58*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538971/3
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.74		ug/L		97	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171412-J-2 MS
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171412-P-2 MSD
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	0	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

GC/MS VOA

Analysis Batch: 538924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171511-1	TRIP BLANK_134	Total/NA	Water	8260D	
240-171511-2	MW-178S_081022	Total/NA	Water	8260D	
MB 240-538924/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538924/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171511-2	MW-178S_081022	Total/NA	Water	8260D SIM	
MB 240-538971/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538971/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171412-J-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171412-P-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Client Sample ID: TRIP BLANK_134

Lab Sample ID: 240-171511-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 16:44

Client Sample ID: MW-178S_081022

Lab Sample ID: 240-171511-2

Date Collected: 08/10/22 10:30

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 17:06
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 05:48

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: DW NPDES RCRA Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sykoria	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 134	8/10/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-178s_08/10/22	08/10/22	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11850 Boston Post Rock Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E20363

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykoria	Arcadis	08/10/22/1447	Arcadis Cold Stor	Arcadis	08/10/22/1447
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/12/22 955	Jeri Hall	EETA	8/12/22 456
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/12/22 950	[signature]	EETNC	8-13-22 0945

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171511
Barberton Facility

Client Arcadis Site Name Livonia

Cooler Received on 8-13-22 Opened on 8-13-22

Cooler unpacked by: me

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? (Yes) No
    If yes, Questions 13-17 have been checked at the originating laboratory. (me) 8-13-22
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171511-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171511-1

		Sample Name:	TRIP BLANK_134				MW-178S_081022			
		Lab Sample ID:	2401715111				2401715112			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

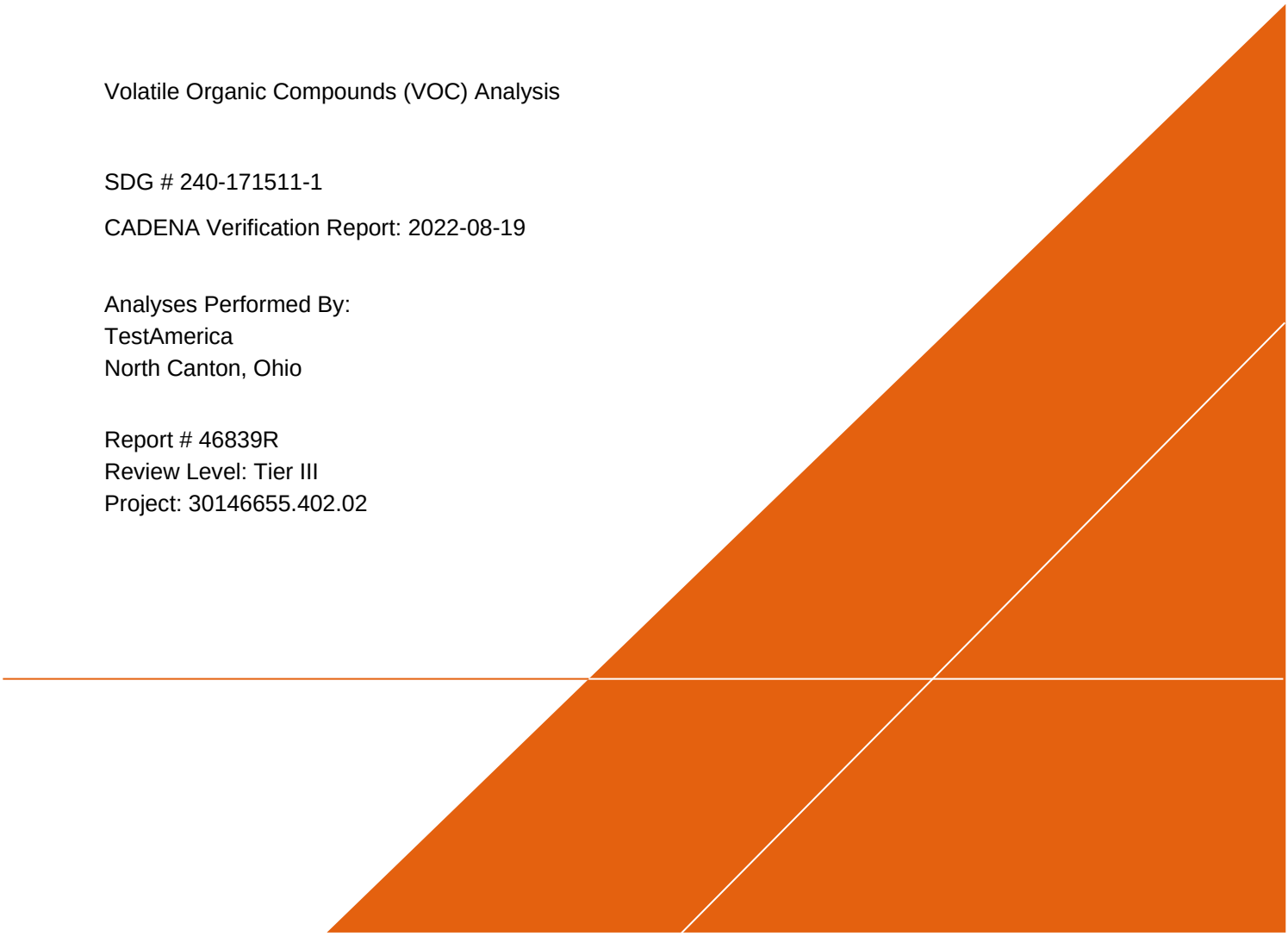
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171511-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46839R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171511-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_134	240-171511-1	Water	08/10/22		X	
MW-178S_081022	240-171511-2	Water	08/10/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 23, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	COC No:
Phone: 248-994-2240	Sampler Name: Sam Sykoria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)	1 of 1 COCs
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:		
PO # 30080642.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 134	8/10/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-178s_08/10/22	08/10/22	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For [ ] Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11850 Boston Post back yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E20363

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykoria	Arcadis	08/10/22/1447	Arcadis Cold Stor	Arcadis	08/10/22/1447
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/12/22 955	Jeri Hall	EETA	8/12/22 456
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/12/22 950	[signature]	EETNC	8-13-22 0945

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8/19/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Client Sample ID: TRIP BLANK_134
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171511-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 16:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 16:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 16:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/15/22 16:44*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 16:44*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/15/22 16:44*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 16:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171511-1

Client Sample ID: MW-178S_081022
Date Collected: 08/10/22 10:30
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171511-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 05:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/16/22 05:48*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 17:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 17:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 17:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/15/22 17:06*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 17:06*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 17:06*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/15/22 17:06*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171735-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:25:47 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
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Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171735-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171735-1

Comments
No additional comments.

Receipt
The samples were received on 8/18/2022 2:08 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6º C and 4.3º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-539547 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_21 (240-171735-1), MW-177S_081622 (240-171735-2), (CCV 240-539547/4), (CCVIS 240-539547/3), (LCS 240-539547/5), (LCS 240-539547/6), (MB 240-539547/8), (240-171736-B-2), (240-171736-C-2 MS) and (240-171736-F-2 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171735-1	TRIP BLANK_21	Water	08/16/22 00:00	08/18/22 14:08
240-171735-2	MW-177S_081622	Water	08/16/22 10:10	08/18/22 14:08

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Client Sample ID: TRIP BLANK_21 — Lab Sample ID: 240-171735-1

No Detections.

Client Sample ID: MW-177S_081622 — Lab Sample ID: 240-171735-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Client Sample ID: TRIP BLANK_21

Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171735-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 16:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 16:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 16:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/19/22 16:40*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/19/22 16:40*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 16:40*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 16:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Client Sample ID: MW-177S_081622
Date Collected: 08/16/22 10:10
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171735-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 22:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/23/22 22:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 19:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 19:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 19:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 19:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/19/22 19:50*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*08/19/22 19:50*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 19:50*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/19/22 19:50*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171735-1	TRIP BLANK_21	100	99	106	107
240-171735-2	MW-177S_081622	104	100	105	108
240-171736-C-2 MS	Matrix Spike	97	103	105	104
240-171736-F-2 MSD	Matrix Spike Duplicate	96	103	107	103
LCS 240-539547/5	Lab Control Sample	91	102	109	102
MB 240-539547/8	Method Blank	96	98	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171735-2	MW-177S_081622	75
240-171736-I-2 MS	Matrix Spike	75
240-171736-O-2 MSD	Matrix Spike Duplicate	74
LCS 240-539899/3	Lab Control Sample	70
MB 240-539899/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539547/8
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 15:05*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/19/22 15:05*	*1*

Lab Sample ID: LCS 240-539547/5
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	29.2		ug/L		117	76 - 123
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	21.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	19.9		ug/L		79	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.2		ug/L		81	56 - 136
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-171736-F-2 MSD
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	25.7		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.0		ug/L		88	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539899/4
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 20:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/23/22 20:09*	*1*

Lab Sample ID: LCS 240-539899/3
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.34		ug/L		93	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171736-I-2 MS
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171736-O-2 MSD
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

GC/MS VOA

Analysis Batch: 539547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171735-1	TRIP BLANK_21	Total/NA	Water	8260D	
240-171735-2	MW-177S_081622	Total/NA	Water	8260D	
MB 240-539547/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539547/5	Lab Control Sample	Total/NA	Water	8260D	
240-171736-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171736-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171735-2	MW-177S_081622	Total/NA	Water	8260D SIM	
MB 240-539899/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539899/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171736-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171736-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Client Sample ID: TRIP BLANK_21

Lab Sample ID: 240-171735-1

Date Collected: 08/16/22 00:00

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 16:40

Client Sample ID: MW-177S_081622

Lab Sample ID: 240-171735-2

Date Collected: 08/16/22 10:10

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 19:50
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/23/22 22:03

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171735-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record 4.3/4.3

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sinkaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_24	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-177s_081622	08/16/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171735 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11866 Boston Post front Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sinkaria	Arcadis	08/16/22/1245	Arcadis Cold Storage	Arcadis	08/16/22/1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/17/22 1005		EETA	8/17/22 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/17/22 10:00		EETNC	8-18-22 1408

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171735
Barberton Facility

Client Arcadis Site Name Ford Livonia

Cooler Received on 8-18-22 Opened on 8-18-22

Cooler unpacked by: MMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171735

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.6	2.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	4.3	4.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171735-1
Sample date: 2022-08-16
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-30
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171735-1

		Sample Name:	TRIP BLANK_21				MW-177S_081622			
		Lab Sample ID:	2401717351				2401717352			
		Sample Date:	8/16/2022				8/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

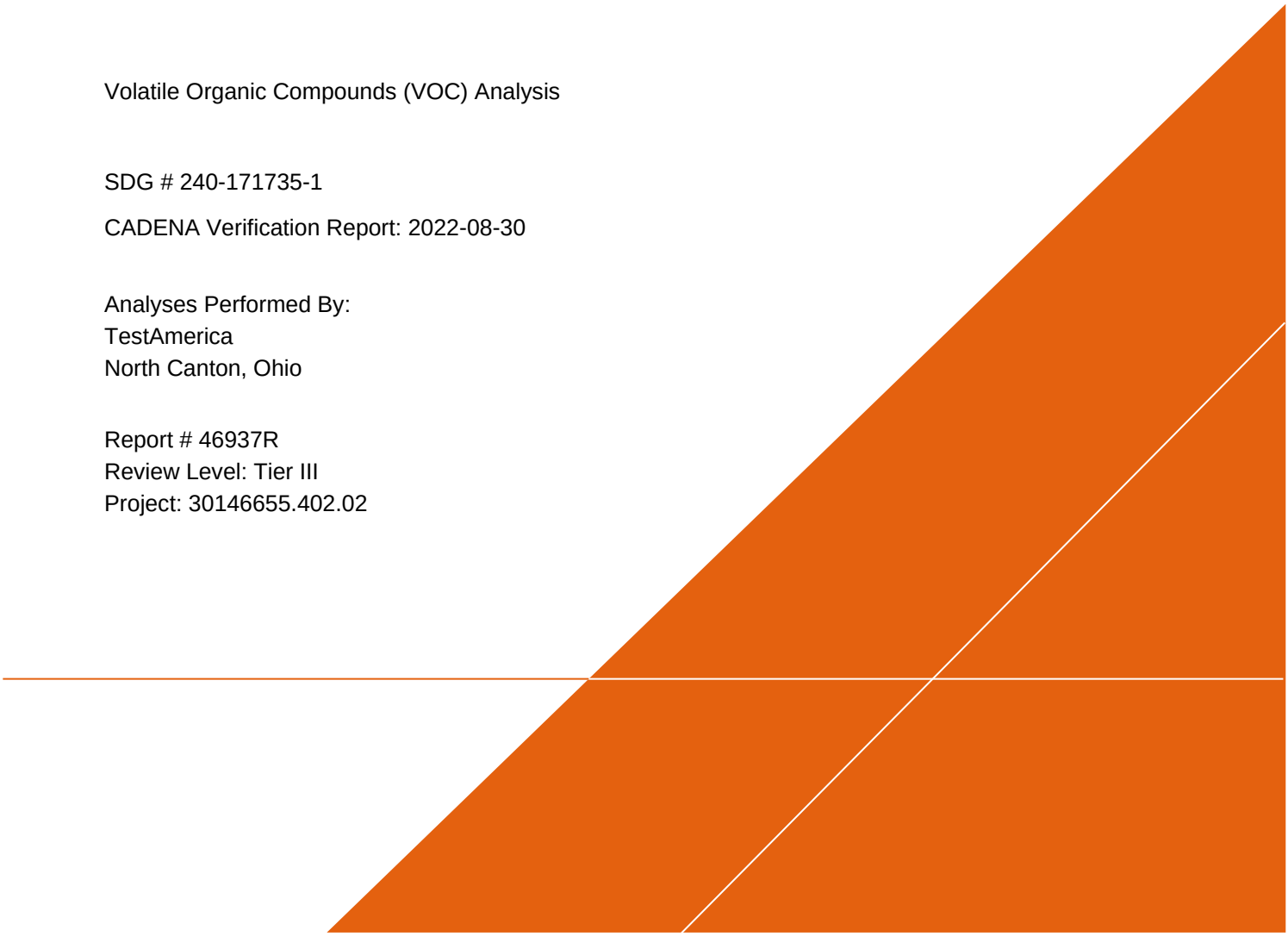
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171735-1

CADENA Verification Report: 2022-08-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46937R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171735-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_21	240-171735-1	Water	08/16/22		X	
MW-177S_081622	240-171735-2	Water	08/16/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_21 MW-177S_081622	Continuous Calibration Verification %D	Tetrachloroethene	+21.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record 4.3/4.3

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sinkaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_24	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-177s_081622	08/16/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171735 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11866 Boston Post Front Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sinkaria	Arcadis	08/16/22/1745	Arcadis Cold Storage	Arcadis	08/16/22/1745
	Arcadis	8/17/22 1005		EETA	8/17/22 10:00
	EETA	8/17/22 10:10	Received in Laboratory by:	EETNC	8-18-22 1405

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Client Sample ID: TRIP BLANK_21
Lab Sample ID: 240-171735-1
Date Collected: 08/16/22 00:00
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 16:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 16:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 16:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/19/22 16:40*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/19/22 16:40*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 16:40*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 16:40*	*1*

Client Sample ID: MW-177S_081622
Lab Sample ID: 240-171735-2
Date Collected: 08/16/22 10:10
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 22:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/23/22 22:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 19:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 19:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 19:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 19:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/19/22 19:50*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*08/19/22 19:50*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 19:50*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/19/22 19:50*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171734-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:23:22 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171734-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171734-1

Comments
No additional comments.

Receipt
The samples were received on 8/18/2022 2:08 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6º C and 4.3º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-539547 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_11 (240-171734-1), MW-184S_081622 (240-171734-2), (CCV 240-539547/4), (CCVIS 240-539547/3), (LCS 240-539547/5), (LCS 240-539547/6), (MB 240-539547/8), (240-171736-B-2), (240-171736-C-2 MS) and (240-171736-F-2 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171734-1	TRIP BLANK_11	Water	08/16/22 00:00	08/18/22 14:08
240-171734-2	MW-184S_081622	Water	08/16/22 11:40	08/18/22 14:08

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Client Sample ID: TRIP BLANK_11 — Lab Sample ID: 240-171734-1

No Detections.

Client Sample ID: MW-184S_081622 — Lab Sample ID: 240-171734-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Client Sample ID: TRIP BLANK_11
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171734-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 16:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 16:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 16:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/19/22 16:17*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/19/22 16:17*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 16:17*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/19/22 16:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Client Sample ID: MW-184S_081622
Date Collected: 08/16/22 11:40
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171734-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/23/22 21:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 19:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 19:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 19:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/19/22 19:26*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 19:26*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 19:26*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 19:26*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171734-1	TRIP BLANK_11	100	97	105	106
240-171734-2	MW-184S_081622	101	98	106	107
240-171736-C-2 MS	Matrix Spike	97	103	105	104
240-171736-F-2 MSD	Matrix Spike Duplicate	96	103	107	103
LCS 240-539547/5	Lab Control Sample	91	102	109	102
MB 240-539547/8	Method Blank	96	98	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171734-2	MW-184S_081622	68
240-171736-I-2 MS	Matrix Spike	75
240-171736-O-2 MSD	Matrix Spike Duplicate	74
LCS 240-539899/3	Lab Control Sample	70
MB 240-539899/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539547/8
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 15:05*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/19/22 15:05*	*1*

Lab Sample ID: LCS 240-539547/5
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	29.2		ug/L		117	76 - 123
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	21.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	19.9		ug/L		79	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.2		ug/L		81	56 - 136
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-171736-F-2 MSD
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	25.7		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.0		ug/L		88	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157	0	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539899/4
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 20:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/23/22 20:09*	*1*

Lab Sample ID: LCS 240-539899/3
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.34		ug/L		93	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171736-I-2 MS
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171736-O-2 MSD
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

GC/MS VOA

Analysis Batch: 539547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171734-1	TRIP BLANK_11	Total/NA	Water	8260D	
240-171734-2	MW-184S_081622	Total/NA	Water	8260D	
MB 240-539547/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539547/5	Lab Control Sample	Total/NA	Water	8260D	
240-171736-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171736-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171734-2	MW-184S_081622	Total/NA	Water	8260D SIM	
MB 240-539899/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539899/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171736-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171736-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Client Sample ID: TRIP BLANK_11

Lab Sample ID: 240-171734-1

Date Collected: 08/16/22 00:00

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 16:17

Client Sample ID: MW-184S_081622

Lab Sample ID: 240-171734-2

Date Collected: 08/16/22 11:40

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 19:26
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/23/22 21:39

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171734-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day ☑ 2 weeks		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-184s-081622	08/16/22	1140		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171734 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 11981 Baston Post Front yard
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/16/22 1245	Arcadis Cold Storage	Arcadis	08/16/22 1245
	Arcadis	8/17/22 1005		ECTA	8/17/2022 10:10
	ECTA	8/17/22 10:10		ECTNC	8-18-22 1408

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 174734
Barberton Facility

Client Arcadis Site Name Ford Livonia

Cooler unpacked by: MMR

Cooler Received on 8-18-22 Opened on 8-18-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171734

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 IR-15	2.6	2.6	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 IR-15	4.3	4.3	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171734-1
Sample date: 2022-08-16
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-30
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171734-1

		Sample Name:	TRIP BLANK_11				MW-184S_081622			
		Lab Sample ID:	2401717341				2401717342			
		Sample Date:	8/16/2022				8/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

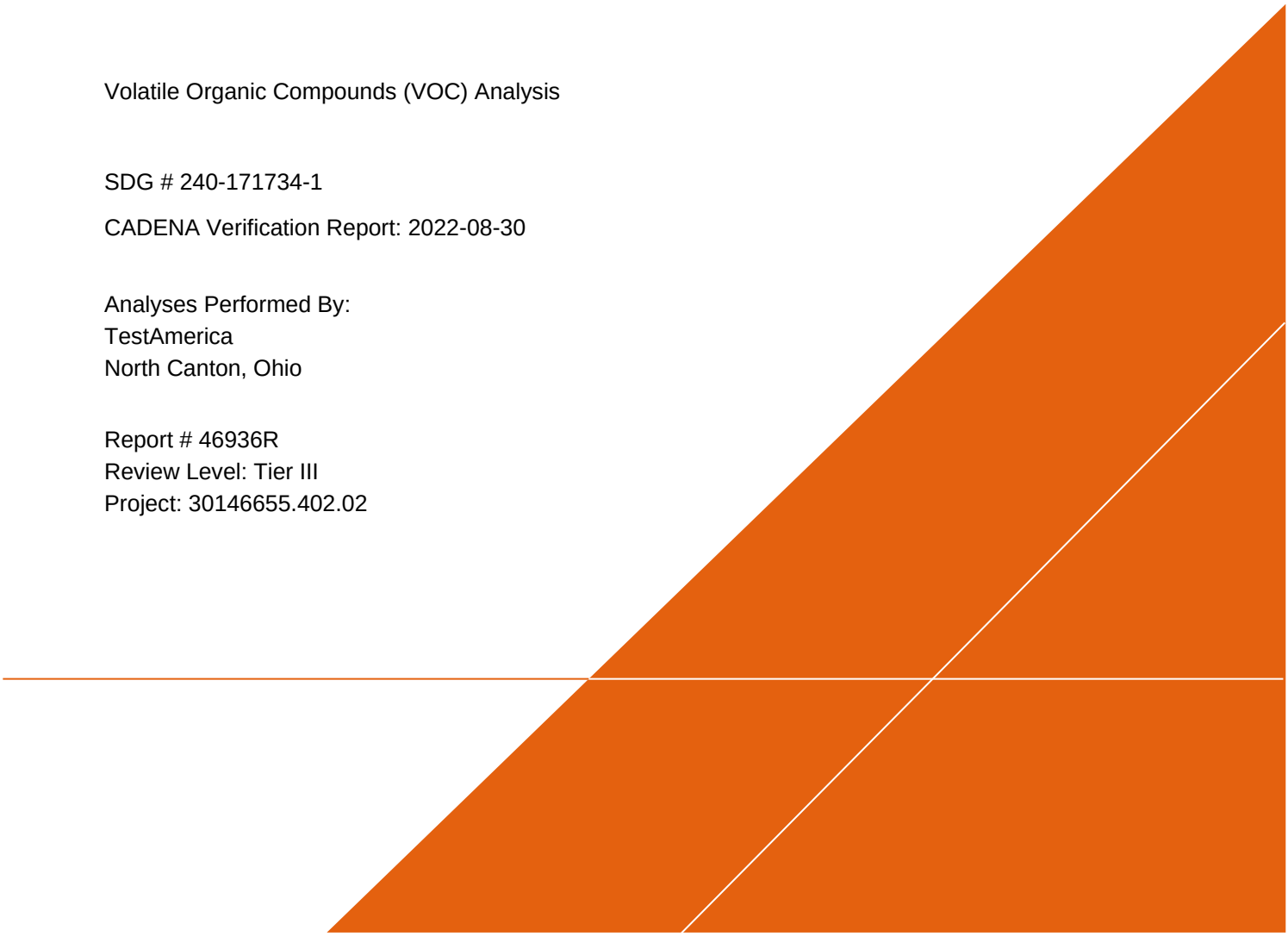
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171734-1

CADENA Verification Report: 2022-08-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46936R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171734-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_11	240-171734-1	Water	08/16/22		X	
MW-184S_081622	240-171734-2	Water	08/16/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_11 MW-184S_081622	Continuous Calibration Verification %D	Tetrachloroethene	+21.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 11	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-184s-081622	08/16/22	1140		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171734 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11981 Baston Post Front yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/16/22 1245	Arcadis Cold Storage	Arcadis	08/16/22 1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/17/22 1005		EETA	8/17/2022 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/17/22 10:10		EETNC	8-18-22 1408

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Client Sample ID: TRIP BLANK_11
Lab Sample ID: 240-171734-1
Date Collected: 08/16/22 00:00
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 16:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 16:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 16:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 16:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/19/22 16:17*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/19/22 16:17*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 16:17*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/19/22 16:17*	*1*

Client Sample ID: MW-184S_081622
Lab Sample ID: 240-171734-2
Date Collected: 08/16/22 11:40
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/23/22 21:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 19:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 19:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 19:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/19/22 19:26*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 19:26*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 19:26*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 19:26*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171579-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:20:55 AM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Job ID: 240-171579-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171579-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-539260 was outside the method criteria for the following analyte(s): Tetrachloroethene. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated. TRIP BLANK_94 (240-171579-1), MW-167S_081222 (240-171579-2) and (CCVIS 240-539260/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171579-1	TRIP BLANK_94	Water	08/12/22 00:00	08/16/22 09:00
240-171579-2	MW-167S_081222	Water	08/12/22 12:05	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Client Sample ID: TRIP BLANK_94 — Lab Sample ID: 240-171579-1

No Detections.

Client Sample ID: MW-167S_081222 — Lab Sample ID: 240-171579-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Client Sample ID: TRIP BLANK_94
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171579-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 16:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 16:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 16:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 16:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/17/22 16:03*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 16:03*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*08/17/22 16:03*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/17/22 16:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Client Sample ID: MW-167S_081222
Date Collected: 08/12/22 12:05
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171579-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/20/22 21:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 16:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 16:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 16:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/17/22 16:27*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/17/22 16:27*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/17/22 16:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/17/22 16:27*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171570-A-3 MS	Matrix Spike	107	104	101	110
240-171570-A-3 MSD	Matrix Spike Duplicate	100	90	95	103
240-171579-1	TRIP BLANK_94	92	88	89	103
240-171579-2	MW-167S_081222	98	93	93	106
LCS 240-539260/5	Lab Control Sample	92	91	90	100
MB 240-539260/8	Method Blank	97	90	91	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171579-2	MW-167S_081222	70
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539260/8
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 15:40*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 15:40*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 15:40*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 15:40*	*1*

Lab Sample ID: LCS 240-539260/5
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	77 - 123
Tetrachloroethene	20.0	23.0		ug/L		115	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	22.5		ug/L		113	70 - 122
Vinyl chloride	20.0	18.8		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	500	U	10000	10300		ug/L		103	56 - 135
cis-1,2-Dichloroethene	500	U	10000	10200		ug/L		102	66 - 128
Tetrachloroethene	500	U	10000	10400		ug/L		104	62 - 131
trans-1,2-Dichloroethene	500	U	10000	9700		ug/L		97	56 - 136
Trichloroethene	500	U	10000	10200		ug/L		102	61 - 124
Vinyl chloride	500	U	10000	10300		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MSD
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	500	U	10000	10900		ug/L		109	56 - 135	6	26
cis-1,2-Dichloroethene	500	U	10000	11300		ug/L		113	66 - 128	10	14
Tetrachloroethene	500	U	10000	11200		ug/L		112	62 - 131	7	20
trans-1,2-Dichloroethene	500	U	10000	10400		ug/L		104	56 - 136	7	15
Trichloroethene	500	U	10000	10600		ug/L		106	61 - 124	4	15
Vinyl chloride	500	U	10000	10700		ug/L		107	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

GC/MS VOA

Analysis Batch: 539260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171579-1	TRIP BLANK_94	Total/NA	Water	8260D	
240-171579-2	MW-167S_081222	Total/NA	Water	8260D	
MB 240-539260/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539260/5	Lab Control Sample	Total/NA	Water	8260D	
240-171570-A-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171570-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171579-2	MW-167S_081222	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Client Sample ID: TRIP BLANK_94

Lab Sample ID: 240-171579-1

Date Collected: 08/12/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 16:03

Client Sample ID: MW-167S_081222

Lab Sample ID: 240-171579-2

Date Collected: 08/12/22 12:05

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 16:27
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 21:04

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_94	8/12/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-167s_081222	08/12/22	12:05		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171579 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments: Stark Front Yard

Sample Address: 12081 Berwyn ST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/12/22 1510	Arcadis Cold Stor.	Arcadis	08/12/22 1600
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
	EETA	8/15/22 10:00	Received in Laboratory by:	EETNC	8-16-22 0900

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Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171579**
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by: [signature]

Cooler Received on 8-16-22 Opened on 8-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water ☑ None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 171579

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171579-1
Sample date: 2022-08-12
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171579-1

		Sample Name:	TRIP BLANK_94				MW-167S_081222			
		Lab Sample ID:	2401715791				2401715792			
		Sample Date:	8/12/2022				8/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

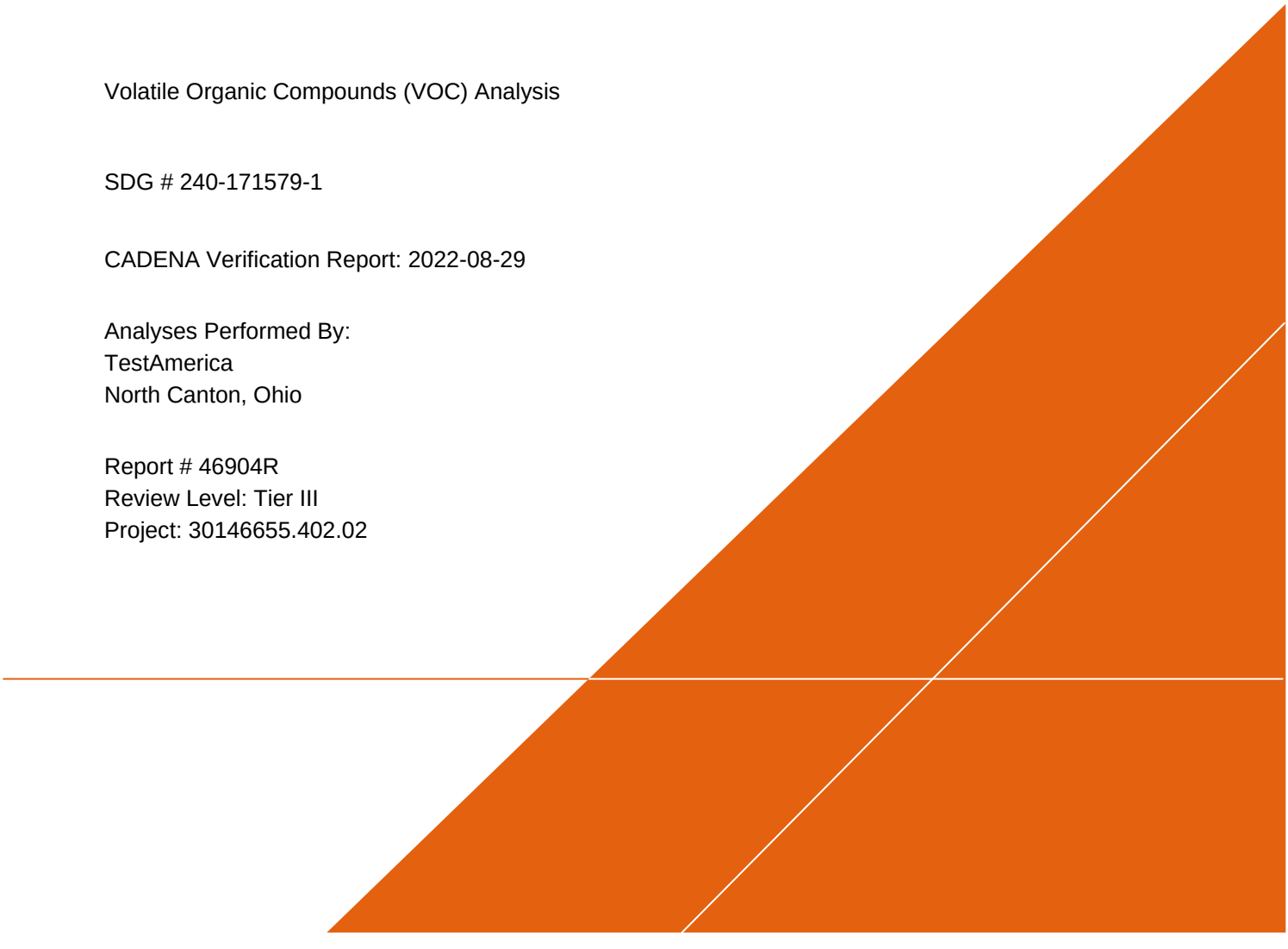
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171579-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46904R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171579-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_94	240-171579-1	Water	08/12/22		X	
MW-167S_081222	240-171579-2	Water	08/12/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_94 MW-167S_081222	Continuous Calibration Verification %D	Tetrachloroethene	22.6%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 29, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 29, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_94	8/12/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-167s_081222	08/12/22	12:05		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171579 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments: Stark Front Yard

Sample Address: 12081 Beech Daly ST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/12/22 1510	Arcadis Cold Stor.	Arcadis	08/12/22 1600
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
	EETA	8/15/22 10:00	Received in Laboratory by:	EETNC	8-16-22 0900

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Client Sample ID: TRIP BLANK_94
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171579-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 16:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 16:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 16:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 16:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/17/22 16:03*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 16:03*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*08/17/22 16:03*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/17/22 16:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171579-1

Client Sample ID: MW-167S_081222
Date Collected: 08/12/22 12:05
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171579-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/20/22 21:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 16:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 16:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 16:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/17/22 16:27*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/17/22 16:27*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/17/22 16:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/17/22 16:27*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171293-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/22/2022 4:23:04 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

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Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171293-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171293-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171293-1	TRIP BLANK_85	Water	08/05/22 00:00	08/10/22 12:39
240-171293-2	MW-162S_080522	Water	08/05/22 10:10	08/10/22 12:39

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Client Sample ID: TRIP BLANK_85 — Lab Sample ID: 240-171293-1

No Detections.

Client Sample ID: MW-162S_080522 — Lab Sample ID: 240-171293-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Client Sample ID: TRIP BLANK_85
Date Collected: 08/05/22 00:00
Date Received: 08/10/22 12:39

Lab Sample ID: 240-171293-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/11/22 13:52*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 13:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Client Sample ID: MW-162S_080522
Date Collected: 08/05/22 10:10
Date Received: 08/10/22 12:39

Lab Sample ID: 240-171293-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 02:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 02:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/11/22 20:11*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/11/22 20:11*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 20:11*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/11/22 20:11*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171285-B-2 MS	Matrix Spike	90	95	101	96
240-171285-D-2 MSD	Matrix Spike Duplicate	92	98	100	97
240-171293-1	TRIP BLANK_85	93	89	98	100
240-171293-2	MW-162S_080522	88	85	95	94
LCS 240-538491/5	Lab Control Sample	89	92	100	95
MB 240-538491/8	Method Blank	95	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
240-171293-2	MW-162S_080522	88
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538491/8
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/11/22 13:03*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 13:03*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:03*	*1*

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.2		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	28.4		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	22.8		ug/L		91	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	22.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	27.8		ug/L		111	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171285-D-2 MSD
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136	1	15
Trichloroethene	1.0	U	25.0	23.5		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.7		ug/L		79	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

GC/MS VOA

Analysis Batch: 538491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171293-1	TRIP BLANK_85	Total/NA	Water	8260D	
240-171293-2	MW-162S_080522	Total/NA	Water	8260D	
MB 240-538491/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538491/5	Lab Control Sample	Total/NA	Water	8260D	
240-171285-B-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171285-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171293-2	MW-162S_080522	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Client Sample ID: TRIP BLANK_85

Lab Sample ID: 240-171293-1

Date Collected: 08/05/22 00:00

Matrix: Water

Date Received: 08/10/22 12:39

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 13:52

Client Sample ID: MW-162S_080522

Lab Sample ID: 240-171293-2

Date Collected: 08/05/22 10:10

Matrix: Water

Date Received: 08/10/22 12:39

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 20:11
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 02:20

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com			
Phone: 248-994-2240	Sampler Name:	Analysis Turnaround Time		For lab use only
Project Name: Ford LTP Off-Site		TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Number: 30080642.402.04	Method of Shipment/Carrier:	10 day		Lab sampling
PO # 30080642.402.04	Shipping/Tracking No:			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 85	8/5/22	——		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-162S_080522	08/05/22	1010		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171293 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 mon
☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: 1217 Brewster Side Yard
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	8/8/22/1615	Arcadis Cold Stor.	Arcadis	8/8/22/1615
Stu Turner	Arcadis	8/9/22 1410	Jen Hall	EETA	8/9/22 1411
Jen Hall	EETA	8/9/22 1446	Mandy Bleau	EEMC	8/10 22 930

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8/22/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # IA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No JH 8-10-22
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171293-1
Sample date: 2022-08-05
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171293-1

		Sample Name:	TRIP BLANK_85				MW-162S_080522			
		Lab Sample ID:	2401712931				2401712932			
		Sample Date:	8/5/2022				8/5/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

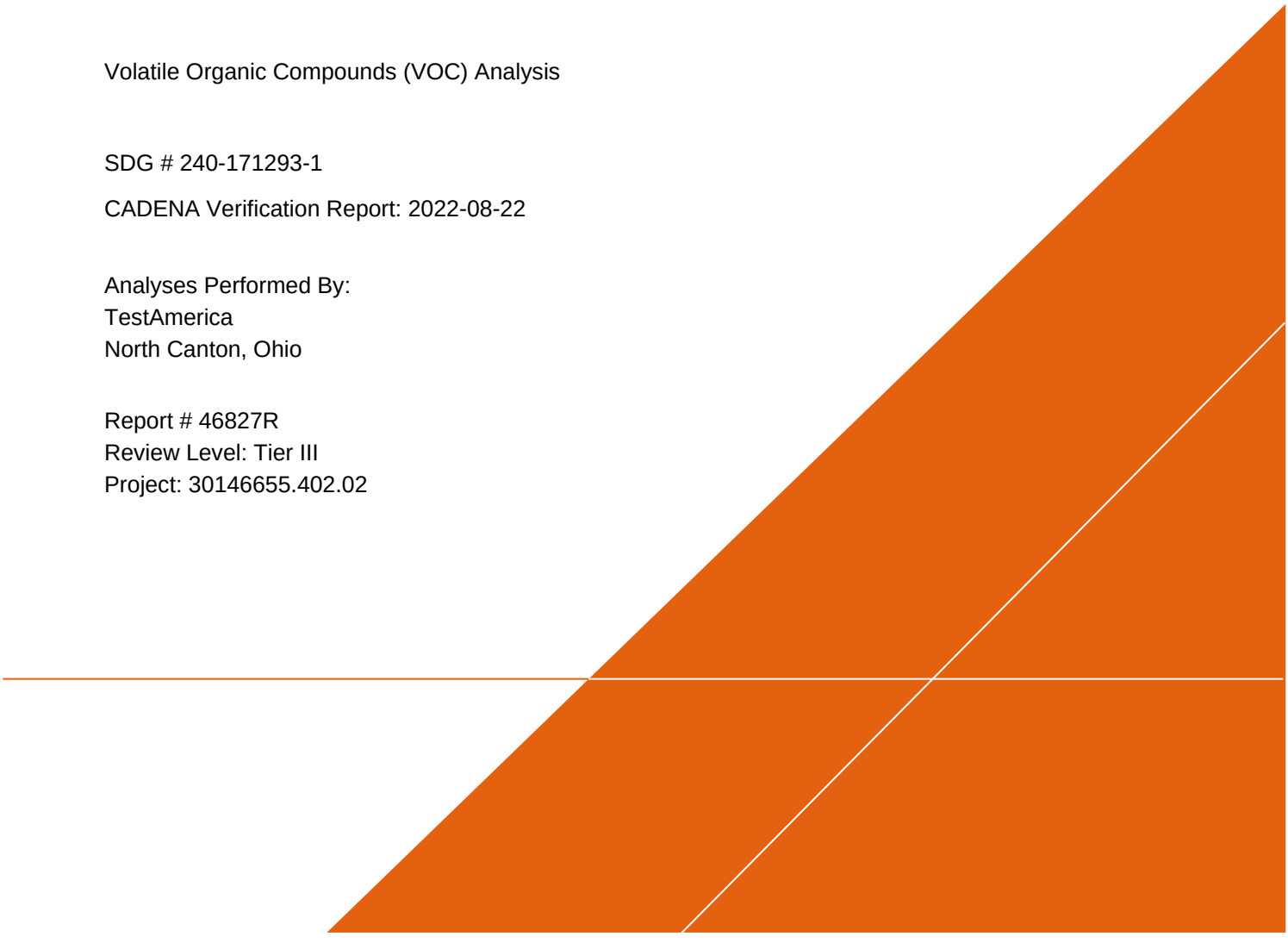
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171293-1

CADENA Verification Report: 2022-08-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46827R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171293-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_85	240-171293-1	Water	08/05/22		X	
MW-162S_080522	240-171293-2	Water	08/05/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 85	8/5/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-162S_080522	08/05/22	1010		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171293 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 mon: ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: 1217 Brewster Side Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	8/5/22/1615	Arcadis Cold Stor.	Arcadis	8/5/22/1615
Stu Turner	Arcadis	8/9/22 1410	Jen Hall	EETA	8/9/22 1411
Jen Hall	EETA	8/9/22 1446	Mandy Bleau	EETMI	8/10/22 930

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Client Sample ID: TRIP BLANK_85
Date Collected: 08/05/22 00:00
Date Received: 08/10/22 12:39

Lab Sample ID: 240-171293-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/11/22 13:52*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 13:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171293-1

Client Sample ID: MW-162S_080522
Date Collected: 08/05/22 10:10
Date Received: 08/10/22 12:39

Lab Sample ID: 240-171293-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 02:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 02:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/11/22 20:11*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/11/22 20:11*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 20:11*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/11/22 20:11*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171869-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/31/2022 2:01:00 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171869-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171869-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171869-1	TRIP BLANK_91	Water	08/18/22 00:00	08/20/22 12:35
240-171869-2	MW-144S_081822	Water	08/18/22 11:20	08/20/22 12:35

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Client Sample ID: TRIP BLANK_91 — Lab Sample ID: 240-171869-1

No Detections.

Client Sample ID: MW-144S_081822 — Lab Sample ID: 240-171869-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Client Sample ID: TRIP BLANK_91

Date Collected: 08/18/22 00:00
Date Received: 08/20/22 12:35

Lab Sample ID: 240-171869-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 17:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 17:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 17:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/23/22 17:08*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 17:08*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/23/22 17:08*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/23/22 17:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Client Sample ID: MW-144S_081822
Date Collected: 08/18/22 11:20
Date Received: 08/20/22 12:35

Lab Sample ID: 240-171869-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 05:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/26/22 05:00*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 17:33*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 17:33*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/23/22 17:33*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 17:33*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171824-E-2 MS	Matrix Spike	87	90	96	88
240-171824-H-2 MSD	Matrix Spike Duplicate	86	90	93	86
240-171869-1	TRIP BLANK_91	86	95	92	85
240-171869-2	MW-144S_081822	89	95	92	88
LCS 240-539814/5	Lab Control Sample	87	93	95	86
MB 240-539814/8	Method Blank	89	93	95	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171824-G-2 MS	Matrix Spike	90
240-171824-M-2 MSD	Matrix Spike Duplicate	90
240-171869-2	MW-144S_081822	91
LCS 240-540264/3	Lab Control Sample	90
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539814/8
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 12:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 12:03*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/23/22 12:03*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 12:03*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 12:03*	*1*

Lab Sample ID: LCS 240-539814/5
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.3		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	18.4		ug/L		92	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	20.0		ug/L		100	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.9		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.3		ug/L		86	61 - 124
Vinyl chloride	1.0	U	20.0	17.3		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171824-H-2 MSD
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	20.3		ug/L		102	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 136	6	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540264/4
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-G-2 MS
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

GC/MS VOA

Analysis Batch: 539814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171869-1	TRIP BLANK_91	Total/NA	Water	8260D	
240-171869-2	MW-144S_081822	Total/NA	Water	8260D	
MB 240-539814/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539814/5	Lab Control Sample	Total/NA	Water	8260D	
240-171824-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171824-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171869-2	MW-144S_081822	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171824-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Client Sample ID: TRIP BLANK_91

Lab Sample ID: 240-171869-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/20/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 17:08

Client Sample ID: MW-144S_081822

Lab Sample ID: 240-171869-2

Date Collected: 08/18/22 11:20

Matrix: Water

Date Received: 08/20/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 17:33
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 05:00

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171869-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_91	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1445_081822	8/18/22	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Analyses

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12033 Stark

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

240-171869 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/18/22 1440	NOVI COLD STORAGE	ARCADIS	8/18/22 1440
	ARCADIS	8/19/22 1000		ETA	8/19/22 1000
	ETA	8/19/22 11:00	Received in Laboratory by:	EETNL	8-20-22 0930

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176869

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP
Cooler Received on 8-20-22 Opened on 8-20-22
Cooler unpacked by: TME
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171869-1
Sample date: 2022-08-18
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171869-1

		Sample Name:	TRIP BLANK_91				MW-144S_081822			
		Lab Sample ID:	2401718691				2401718692			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

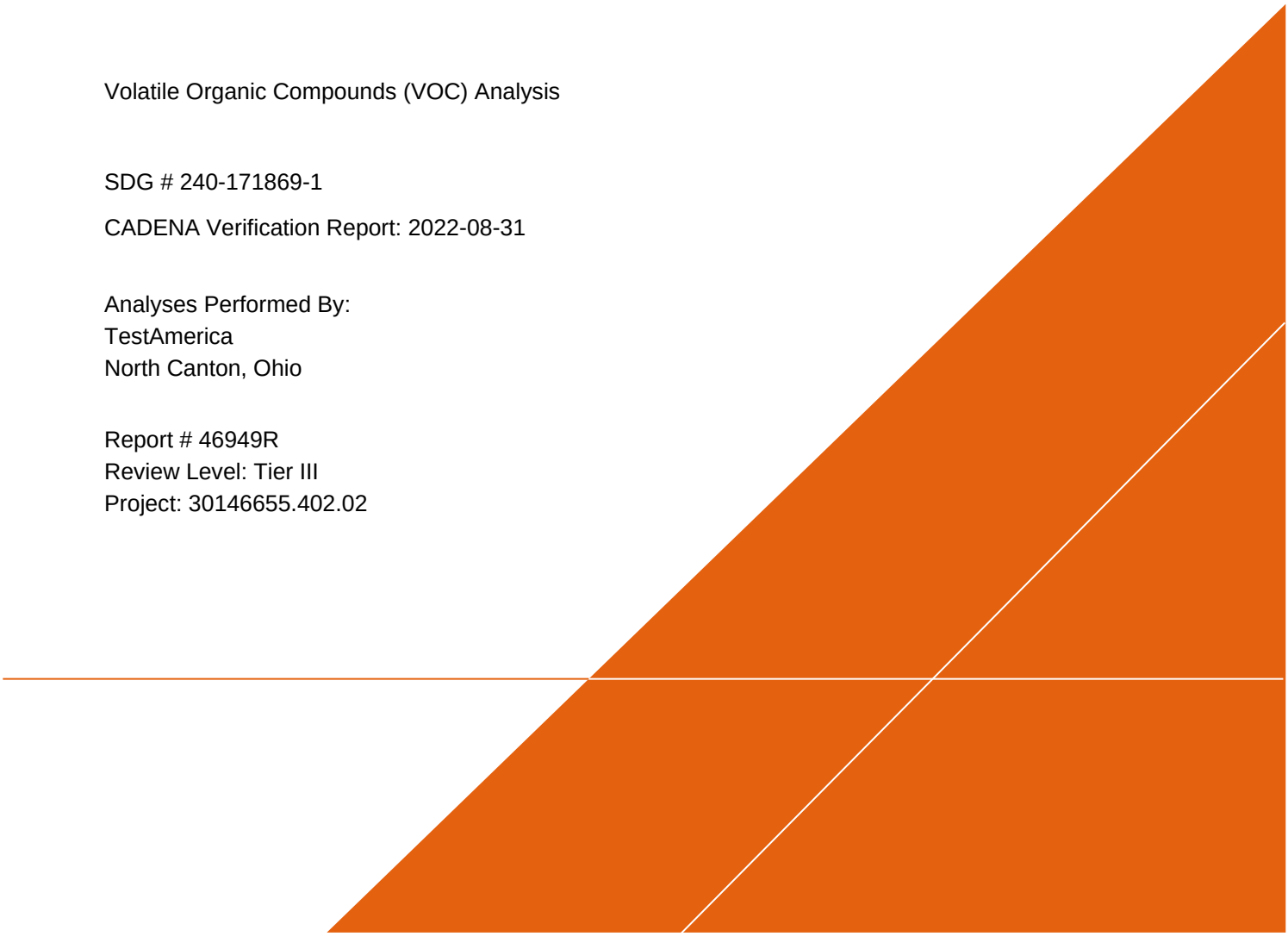
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171869-1

CADENA Verification Report: 2022-08-31

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46949R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171869-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_91	240-171869-1	Water	08/18/22		X	
MW-144S_081822	240-171869-2	Water	08/18/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_91	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1445_081822	8/18/22	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171869 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12033 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	ARCADIS	8/18/22 1440	NOVI COLD STORAGE	ARCADIS	8/18/22 1440
Relinquished by:	ARCADIS	8/19/22 1000		ETA	8/19/22 1000
Relinquished by:	EETA	8/19/22 11:00	Received in Laboratory by:	EETNL	8-20-22 0930

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08/31/2022

Client Sample ID: TRIP BLANK_91
Lab Sample ID: 240-171869-1
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 12:35

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 17:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 17:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 17:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/23/22 17:08*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 17:08*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/23/22 17:08*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/23/22 17:08*	*1*

Client Sample ID: MW-144S_081822
Lab Sample ID: 240-171869-2
Date Collected: 08/18/22 11:20
Matrix: Water
Date Received: 08/20/22 12:35

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 05:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/26/22 05:00*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 17:33*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 17:33*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/23/22 17:33*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 17:33*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171817-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 8:46:56 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Job ID: 240-171817-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171817-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171817-1	TRIP BLANK_01	Water	08/17/22 00:00	08/19/22 09:50
240-171817-2	MW-119S_081722	Water	08/17/22 12:40	08/19/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Client Sample ID: TRIP BLANK_01 — Lab Sample ID: 240-171817-1

No Detections.

Client Sample ID: MW-119S_081722 — Lab Sample ID: 240-171817-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Client Sample ID: TRIP BLANK_01
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171817-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 14:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 14:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 14:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 14:59*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/22/22 14:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 14:59*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/22/22 14:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Client Sample ID: MW-119S_081722
Date Collected: 08/17/22 12:40
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171817-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 23:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/24/22 23:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 15:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 15:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 15:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 15:24*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 15:24*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 15:24*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 15:24*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171817-1	TRIP BLANK_01	89	96	94	85
240-171817-2	MW-119S_081722	89	94	95	87
240-171821-E-4 MSD	Matrix Spike Duplicate	85	93	95	86
240-171821-H-4 MS	Matrix Spike	88	91	96	88
LCS 240-539643/5	Lab Control Sample	86	92	97	86
MB 240-539643/8	Method Blank	89	95	95	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171817-2	MW-119S_081722	89
240-171821-I-4 MS	Matrix Spike	86
240-171821-M-4 MSD	Matrix Spike Duplicate	88
LCS 240-540081/3	Lab Control Sample	91
MB 240-540081/4	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539643/8
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 12:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 12:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 12:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 12:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 12:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 12:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 12:29*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 12:29*	*1*

Lab Sample ID: LCS 240-539643/5
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.0		ug/L		85	77 - 123
Tetrachloroethene	20.0	19.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	17.5		ug/L		88	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	18.3		ug/L		91	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	86		73 - 120

Lab Sample ID: 240-171821-H-4 MS
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.8		ug/L		84	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		62 - 137
4-Bromofluorobenzene (Surr)	91		56 - 136
Toluene-d8 (Surr)	96		78 - 122
Dibromofluoromethane (Surr)	88		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		66 - 120		08/24/22 18:05	1

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		66 - 120

Lab Sample ID: 240-171821-I-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-M-4 MSD
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

GC/MS VOA

Analysis Batch: 539643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171817-1	TRIP BLANK_01	Total/NA	Water	8260D	
240-171817-2	MW-119S_081722	Total/NA	Water	8260D	
MB 240-539643/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539643/5	Lab Control Sample	Total/NA	Water	8260D	
240-171821-E-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171821-H-4 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171817-2	MW-119S_081722	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171821-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Client Sample ID: TRIP BLANK_01

Lab Sample ID: 240-171817-1

Date Collected: 08/17/22 00:00

Matrix: Water

Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 14:59

Client Sample ID: MW-119S_081722

Lab Sample ID: 240-171817-2

Date Collected: 08/17/22 12:40

Matrix: Water

Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 15:24
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/24/22 23:34

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171817-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No: 1 of 1 COCs
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day (3 weeks / 2 weeks / 1 week / 2 days / 1 day)		Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_01	08/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-119s_081722	08/17/22	1240		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171817 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12034 Boston Post Side Yard
Submit all results through Cadena at jfomaba@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/17/22 1340	Arcadis Cold Stor.	Arcadis	08/17/22 1340
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/18/22 950	Gina Rivera	ETA	8-18-22 9:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Gina Rivera	ETA	8-18-22 1700	[illegible]	ETA	8-19-22 9:50

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Eurofins - Canton Sample Receipt Form/Narrative **Login # : 817817**
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-19-22 Opened on 8-19-22

Cooler unpacked by: Charlie K

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.8 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity ____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No JH 8-30-22
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

September 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171817-1
Sample date: 2022-08-17
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171817-1

		Sample Name:	TRIP BLANK_01				MW-119S_081722			
		Lab Sample ID:	2401718171				2401718172			
		Sample Date:	8/17/2022				8/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

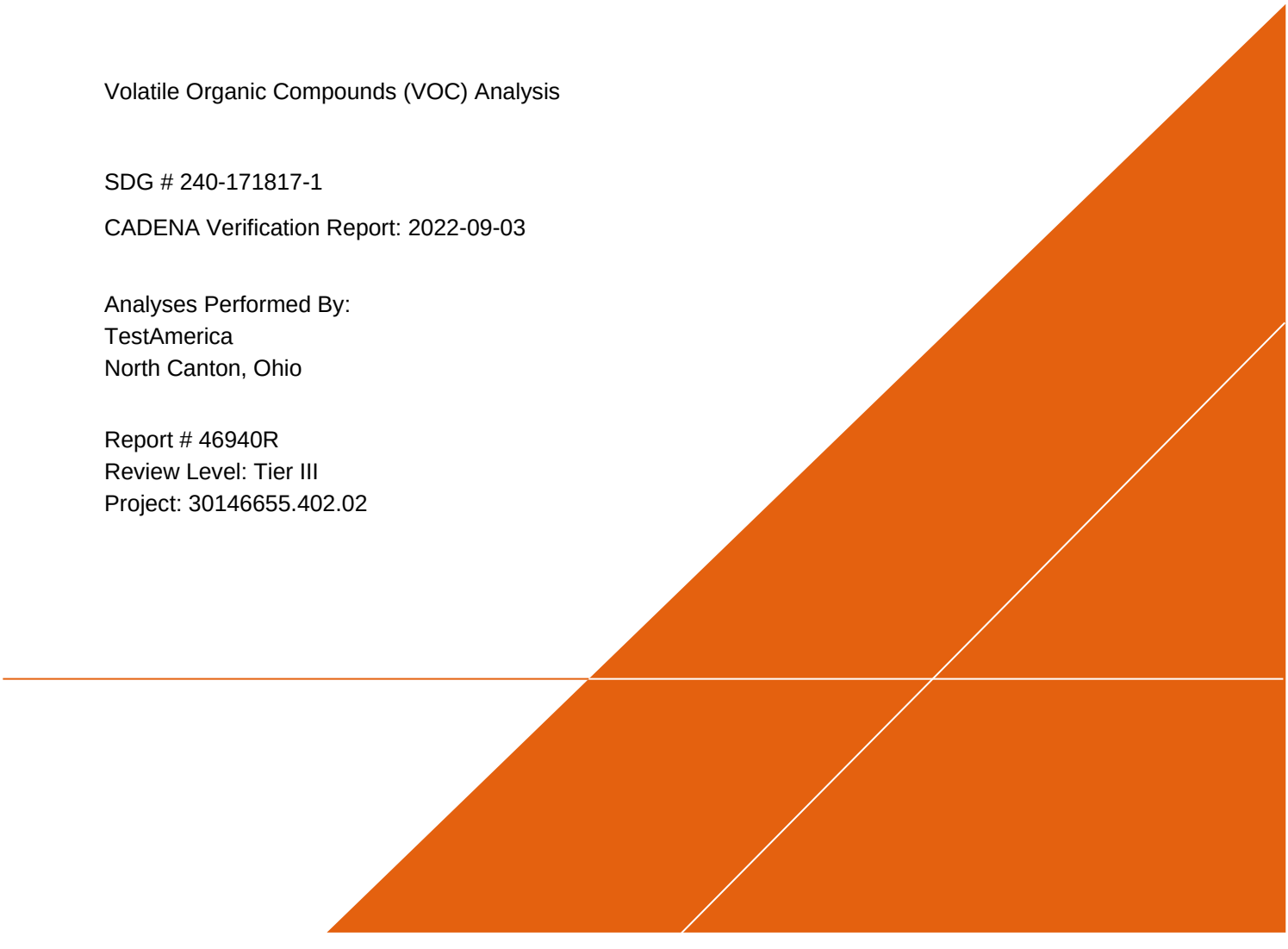
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171817-1

CADENA Verification Report: 2022-09-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46940R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171817-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_01	240-171817-1	Water	08/17/22		X	
MW-119S_081722	240-171817-2	Water	08/17/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_01	08/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-119s_08172	08/17/22	1240		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171817 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12034 Boston Post Side Yard
Submit all results through Cadena at jfomaca@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/17/22/1340	Arcadis Cold Stor.	Arcadis	08/17/22/1340
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/18/22 950	Gina Rivera	ETA	8-18-22 9:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Gina Rivera	ETA	8-18-221700	Charlie Lee	ETA	8-19-22 9.50

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Client Sample ID: TRIP BLANK_01
Lab Sample ID: 240-171817-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 14:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 14:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 14:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 14:59*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/22/22 14:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 14:59*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/22/22 14:59*	*1*

Client Sample ID: MW-119S_081722
Lab Sample ID: 240-171817-2
Date Collected: 08/17/22 12:40
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 23:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/24/22 23:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 15:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 15:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 15:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 15:24*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 15:24*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 15:24*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 15:24*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171277-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/22/2022 4:06:17 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Job ID: 240-171277-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171277-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171277-1	TRIP BLANK_65	Water	08/05/22 00:00	08/10/22 11:34
240-171277-2	MW-91S_080522	Water	08/05/22 11:40	08/10/22 11:34

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Client Sample ID: TRIP BLANK_65 — Lab Sample ID: 240-171277-1

No Detections.

Client Sample ID: MW-91S_080522 — Lab Sample ID: 240-171277-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Client Sample ID: TRIP BLANK_65
Date Collected: 08/05/22 00:00
Date Received: 08/10/22 11:34

Lab Sample ID: 240-171277-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/11/22 18:09*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*08/11/22 18:09*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/11/22 18:09*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/11/22 18:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Client Sample ID: MW-91S_080522
Date Collected: 08/05/22 11:40
Date Received: 08/10/22 11:34

Lab Sample ID: 240-171277-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 21:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 21:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/11/22 18:33*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/11/22 18:33*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 18:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/11/22 18:33*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-17 MS	Matrix Spike	93	90	102	103
240-171141-B-17 MSD	Matrix Spike Duplicate	97	91	101	106
240-171277-1	TRIP BLANK_65	89	82	92	97
240-171277-2	MW-91S_080522	91	83	94	97
LCS 240-538489/8	Lab Control Sample	90	86	96	99
MB 240-538489/9	Method Blank	90	83	94	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171277-2	MW-91S_080522	86
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538489/9
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/11/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/11/22 13:39*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 13:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/11/22 13:39*	*1*

Lab Sample ID: LCS 240-538489/8
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.4		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	77 - 123
Tetrachloroethene	20.0	17.6		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	250	226		ug/L		90	56 - 135
cis-1,2-Dichloroethene	13		250	249		ug/L		94	66 - 128
Tetrachloroethene	690	F1	250	867	E	ug/L		70	62 - 131
trans-1,2-Dichloroethene	13	U	250	214		ug/L		85	56 - 136
Trichloroethene	14		250	245		ug/L		92	61 - 124
Vinyl chloride	13	U	250	212		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MSD
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	229		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	13		250	265		ug/L		101	66 - 128	6	14
Tetrachloroethene	690	F1	250	844	E F1	ug/L		61	62 - 131	3	20
trans-1,2-Dichloroethene	13	U	250	223		ug/L		89	56 - 136	4	15
Trichloroethene	14		250	255		ug/L		96	61 - 124	4	15
Vinyl chloride	13	U	250	216		ug/L		86	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

GC/MS VOA

Analysis Batch: 538489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171277-1	TRIP BLANK_65	Total/NA	Water	8260D	
240-171277-2	MW-91S_080522	Total/NA	Water	8260D	
MB 240-538489/9	Method Blank	Total/NA	Water	8260D	
LCS 240-538489/8	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-17 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171277-2	MW-91S_080522	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Client Sample ID: TRIP BLANK_65

Lab Sample ID: 240-171277-1

Date Collected: 08/05/22 00:00

Matrix: Water

Date Received: 08/10/22 11:34

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 18:09

Client Sample ID: MW-91S_080522

Lab Sample ID: 240-171277-2

Date Collected: 08/05/22 11:40

Matrix: Water

Date Received: 08/10/22 11:34

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 18:33
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/14/22 21:17

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171277-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_SG	8/5/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-9_S_080522	08/05/22	1140		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171277 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12034 Brewster st. front yard

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/05/22/1610	Arcadis Cold Stor	Arcadis	08/05/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/9/22 1410		EEA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	8/9/22 1446		eeinc	8-10-22 935

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171277-1
Sample date: 2022-08-05
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171277-1

		Sample Name:	TRIP BLANK_65				MW-91S_080522			
		Lab Sample ID:	2401712771				2401712772			
		Sample Date:	8/5/2022				8/5/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

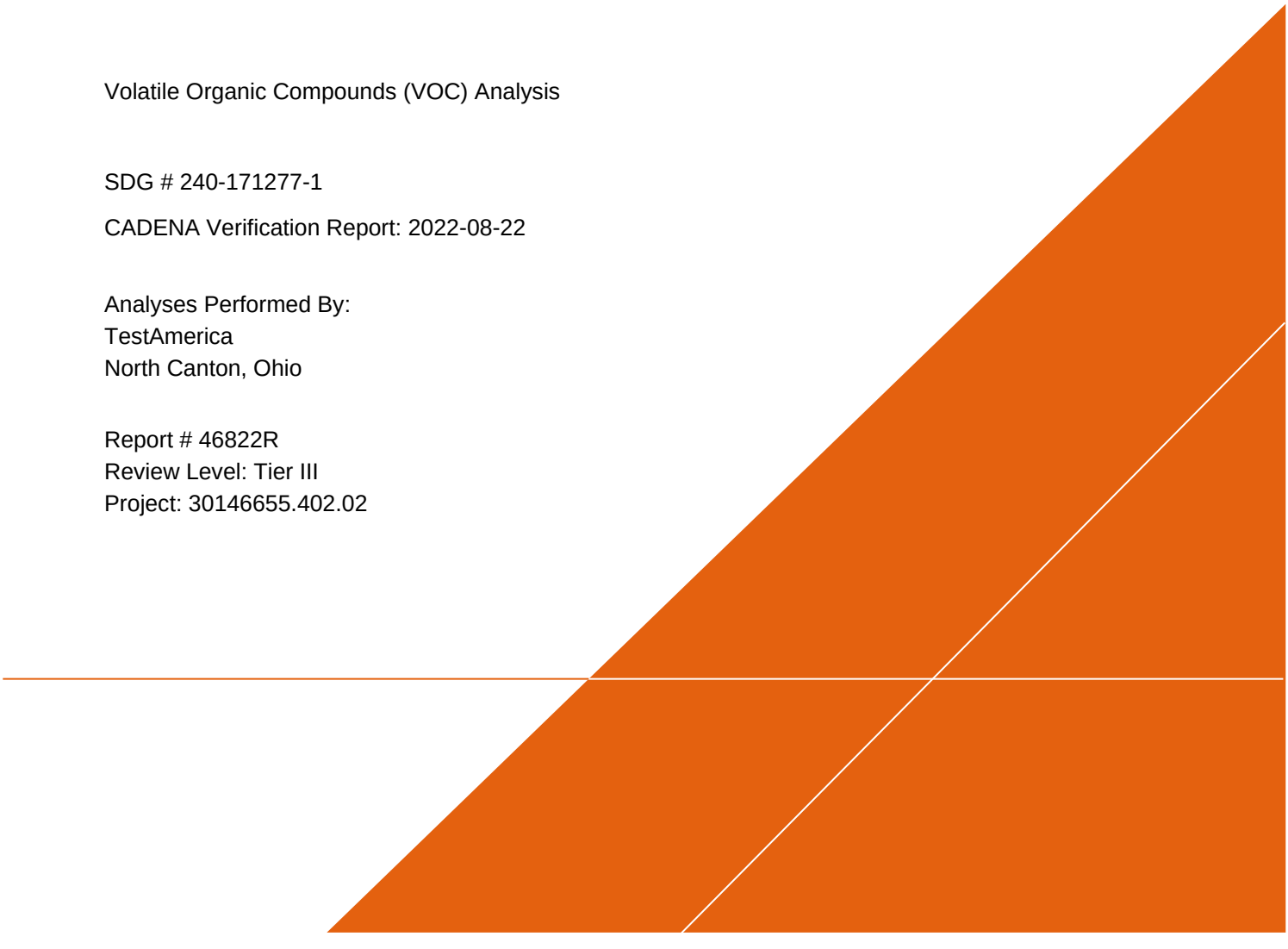
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171277-1

CADENA Verification Report: 2022-08-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46822R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171277-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_65	240-171277-1	Water	08/05/22		X	
MW-91S_080522	240-171277-2	Water	08/05/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 19, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 20, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client
Phone: 248-994-2240	Sampler Name:	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sampler Name should include Sam Sukaria.

Sample Identification	Sample Date	Sample Time	Matrix: Air	Matrix: Aqueous	Matrix: Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_SS	8/5/22	——		X				1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-9LS_080522	08/05/22	1140		X				6					N	G	XX	X	X	X	XX	XX	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171277 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12034 Brewster st. front yard
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/05/22/1600	Arcadis, Cold Star	Arcadis	08/05/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/9/22 1410	[illegible]	EETA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EETA	8/9/22 1446	[illegible]	eeinc	8-10-22 935

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08/22/2022

Client Sample ID: TRIP BLANK_65
Lab Sample ID: 240-171277-1
Date Collected: 08/05/22 00:00
Matrix: Water
Date Received: 08/10/22 11:34

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/11/22 18:09*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*08/11/22 18:09*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/11/22 18:09*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/11/22 18:09*	*1*

Client Sample ID: MW-91S_080522
Lab Sample ID: 240-171277-2
Date Collected: 08/05/22 11:40
Matrix: Water
Date Received: 08/10/22 11:34

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 21:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 21:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/11/22 18:33*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/11/22 18:33*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 18:33*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/11/22 18:33*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171283-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/22/2022 4:13:15 PM
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Designee for

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Job ID: 240-171283-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171283-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171283-1	TRIP BLANK_83	Water	08/05/22 00:00	08/10/22 11:49
240-171283-2	MW-92S_080522	Water	08/05/22 13:45	08/10/22 11:49

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Client Sample ID: TRIP BLANK_83 — Lab Sample ID: 240-171283-1

No Detections.

Client Sample ID: MW-92S_080522 — Lab Sample ID: 240-171283-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Client Sample ID: TRIP BLANK_83

Date Collected: 08/05/22 00:00
Date Received: 08/10/22 11:49

Lab Sample ID: 240-171283-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 19:47*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/11/22 19:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/11/22 19:47*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 19:47*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Client Sample ID: MW-92S_080522
Date Collected: 08/05/22 13:45
Date Received: 08/10/22 11:49

Lab Sample ID: 240-171283-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/14/22 22:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 20:11*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/11/22 20:11*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/11/22 20:11*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 20:11*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-17 MS	Matrix Spike	93	90	102	103
240-171141-B-17 MSD	Matrix Spike Duplicate	97	91	101	106
240-171283-1	TRIP BLANK_83	93	84	97	100
240-171283-2	MW-92S_080522	93	84	96	100
LCS 240-538489/8	Lab Control Sample	90	86	96	99
MB 240-538489/9	Method Blank	90	83	94	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171283-2	MW-92S_080522	87
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538489/9
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/11/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/11/22 13:39*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 13:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/11/22 13:39*	*1*

Lab Sample ID: LCS 240-538489/8
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.4		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	77 - 123
Tetrachloroethene	20.0	17.6		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	250	226		ug/L		90	56 - 135
cis-1,2-Dichloroethene	13		250	249		ug/L		94	66 - 128
Tetrachloroethene	690	F1	250	867	E	ug/L		70	62 - 131
trans-1,2-Dichloroethene	13	U	250	214		ug/L		85	56 - 136
Trichloroethene	14		250	245		ug/L		92	61 - 124
Vinyl chloride	13	U	250	212		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MSD
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	229		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	13		250	265		ug/L		101	66 - 128	6	14
Tetrachloroethene	690	F1	250	844	E F1	ug/L		61	62 - 131	3	20
trans-1,2-Dichloroethene	13	U	250	223		ug/L		89	56 - 136	4	15
Trichloroethene	14		250	255		ug/L		96	61 - 124	4	15
Vinyl chloride	13	U	250	216		ug/L		86	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

GC/MS VOA

Analysis Batch: 538489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171283-1	TRIP BLANK_83	Total/NA	Water	8260D	
240-171283-2	MW-92S_080522	Total/NA	Water	8260D	
MB 240-538489/9	Method Blank	Total/NA	Water	8260D	
LCS 240-538489/8	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-17 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171283-2	MW-92S_080522	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Client Sample ID: TRIP BLANK_83

Lab Sample ID: 240-171283-1

Date Collected: 08/05/22 00:00

Matrix: Water

Date Received: 08/10/22 11:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 19:47

Client Sample ID: MW-92S_080522

Lab Sample ID: 240-171283-2

Date Collected: 08/05/22 13:45

Matrix: Water

Date Received: 08/10/22 11:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 20:11
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/14/22 22:07

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171283-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_83	8/5/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-92S_080522	08/05/22	1345		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171283 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 07036 Brewster St front yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	1610 08/05/22	Arcadis Cold Stor	Arcadis	08/05/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/9/22 1410		EETA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/9/22 1446		eetmi	8/10/22 9:35

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Needs Trip Blanks!!! ST 8/9/22

8/22/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171283-1
Sample date: 2022-08-05
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171283-1

		Sample Name:	TRIP BLANK_83				MW-92S_080522			
		Lab Sample ID:	2401712831				2401712832			
		Sample Date:	8/5/2022				8/5/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

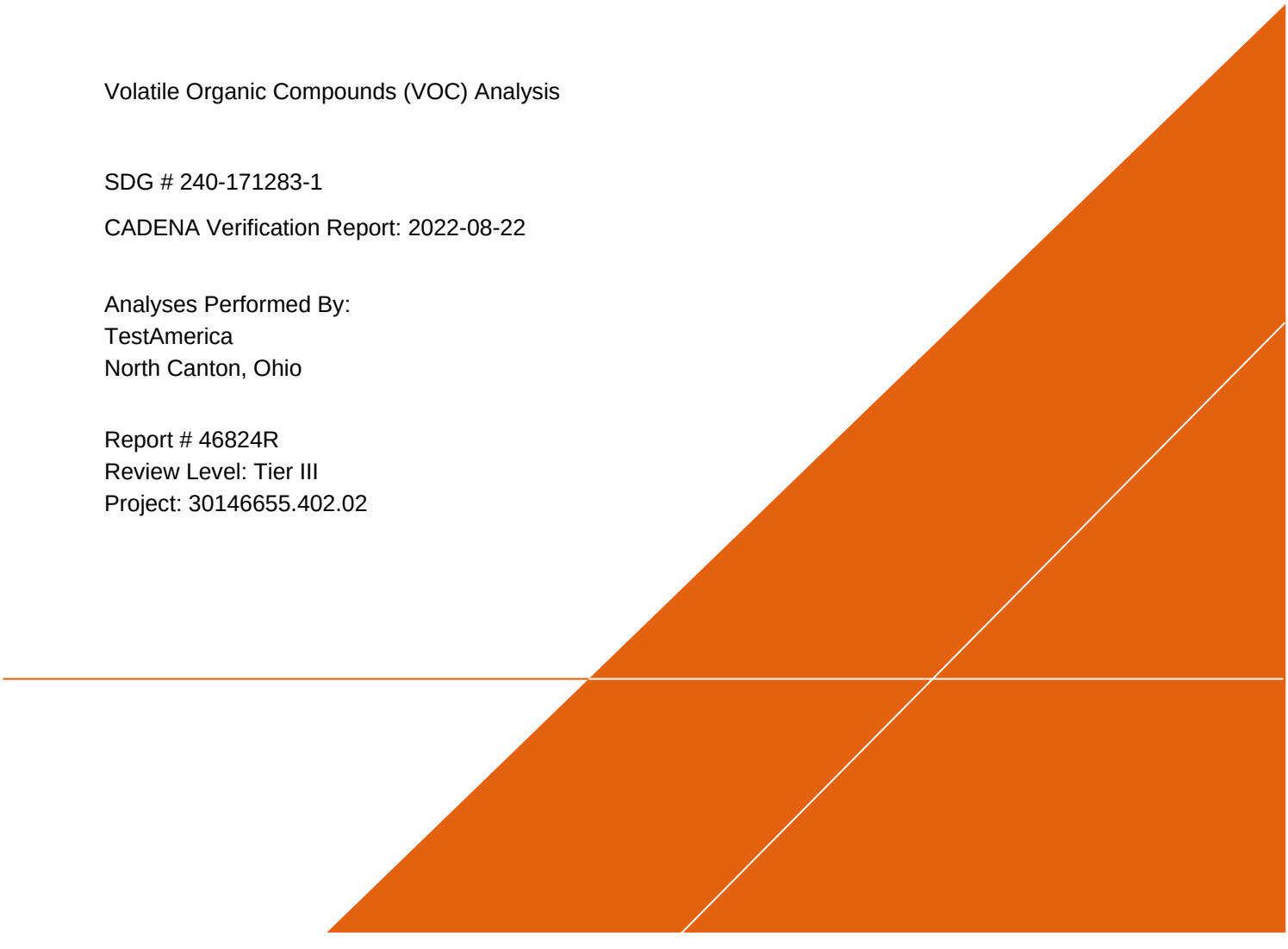
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171283-1

CADENA Verification Report: 2022-08-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46824R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171283-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_83	240-171283-1	Water	08/05/22		X	
MW-92S_080522	240-171283-2	Water	08/05/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 19, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 20, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 2 weeks		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_83	8/5/22	—		X						1					N	G	X	X	X	X	X	X					1 Trip Blank
MW-92S_080522	08/05/22	1345		X						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171283 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ✓ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 0036 Brewster St front yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	1610 08/05/22	Arcadis Cold Stor	Arcadis	08/05/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/9/22 1410	Jen Heal	EETA	8/9/22 1411
Relinquished by: Jen Heal	Company: EETA	Date/Time: 8/9/22 1446	Received in Laboratory by: Mandaly Bla	Company: eetmi	Date/Time: 8/10/22 9:35

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Needs Trip Blanks!!! ST 8/9/22

08/22/2022

Client Sample ID: TRIP BLANK_83
Lab Sample ID: 240-171283-1
Date Collected: 08/05/22 00:00
Matrix: Water
Date Received: 08/10/22 11:49

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 19:47*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/11/22 19:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/11/22 19:47*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 19:47*	*1*

Client Sample ID: MW-92S_080522
Lab Sample ID: 240-171283-2
Date Collected: 08/05/22 13:45
Matrix: Water
Date Received: 08/10/22 11:49

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/14/22 22:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 20:11*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/11/22 20:11*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/11/22 20:11*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 20:11*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171872-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 9:06:09 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Job ID: 240-171872-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171872-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171872-1	TRIP BLANK_93	Water	08/18/22 00:00	08/20/22 09:35
240-171872-2	MW-111S_081822	Water	08/18/22 12:10	08/20/22 09:35

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Client Sample ID: TRIP BLANK_93 — Lab Sample ID: 240-171872-1

No Detections.

Client Sample ID: MW-111S_081822 — Lab Sample ID: 240-171872-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Client Sample ID: TRIP BLANK_93
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171872-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 18:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 18:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 18:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 18:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/23/22 18:48*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 18:48*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/23/22 18:48*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Client Sample ID: MW-111S_081822

Date Collected: 08/18/22 12:10
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171872-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/26/22 21:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/23/22 19:13*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/23/22 19:13*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 19:13*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 19:13*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171824-E-2 MS	Matrix Spike	87	90	96	88
240-171824-H-2 MSD	Matrix Spike Duplicate	86	90	93	86
240-171872-1	TRIP BLANK_93	89	97	94	86
240-171872-2	MW-111S_081822	88	97	93	87
LCS 240-539814/5	Lab Control Sample	87	93	95	86
MB 240-539814/8	Method Blank	89	93	95	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171856-L-3 MS	Matrix Spike	91
240-171856-P-3 MSD	Matrix Spike Duplicate	90
240-171872-2	MW-111S_081822	90
LCS 240-540388/3	Lab Control Sample	92
MB 240-540388/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539814/8
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 12:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 12:03*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/23/22 12:03*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 12:03*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 12:03*	*1*

Lab Sample ID: LCS 240-539814/5
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.3		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	18.4		ug/L		92	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	20.0		ug/L		100	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.9		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.3		ug/L		86	61 - 124
Vinyl chloride	1.0	U	20.0	17.3		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171824-H-2 MSD
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	20.3		ug/L		102	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 136	6	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540388/4
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 18:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/26/22 18:32*	*1*

Lab Sample ID: LCS 240-540388/3
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*

Lab Sample ID: 240-171856-L-3 MS
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.7		ug/L		117	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171856-P-3 MSD
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

GC/MS VOA

Analysis Batch: 539814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171872-1	TRIP BLANK_93	Total/NA	Water	8260D	
240-171872-2	MW-111S_081822	Total/NA	Water	8260D	
MB 240-539814/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539814/5	Lab Control Sample	Total/NA	Water	8260D	
240-171824-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171824-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171872-2	MW-111S_081822	Total/NA	Water	8260D SIM	
MB 240-540388/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540388/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171856-L-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171856-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Client Sample ID: TRIP BLANK_93

Lab Sample ID: 240-171872-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 18:48

Client Sample ID: MW-111S_081822

Lab Sample ID: 240-171872-2

Date Collected: 08/18/22 12:10

Matrix: Water

Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 19:13
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/26/22 21:04

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_93	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-111S_081822	8/18/22	1210		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171872 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12051 Stark

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/18/22 1440	NOVI COLD STORAGE	ARCADIS	8/18/22 1440
[illegible]	ARCADIS	8/19/22 1000	Gina Rivera	ETA	8/19/22 1000
[illegible]	EETA	8/19/22 11:00	Received in Laboratory by: [illegible]	EETNC	Date/Time: 8-20-22 0935

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171872

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP | Cooler unpacked by: me

Cooler Received on 8-20-22 Opened on 8-20-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420IG	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 240-171872-1

Login Number: 171872
List Number: 1
Creator: Houghton, Brandon G

List Source: Eurofins Canton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

DATA VERIFICATION REPORT

September 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171872-1
Sample date: 2022-08-18
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171872-1

		Sample Name:	TRIP BLANK_93				MW-111S_081822			
		Lab Sample ID:	2401718721				2401718722			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

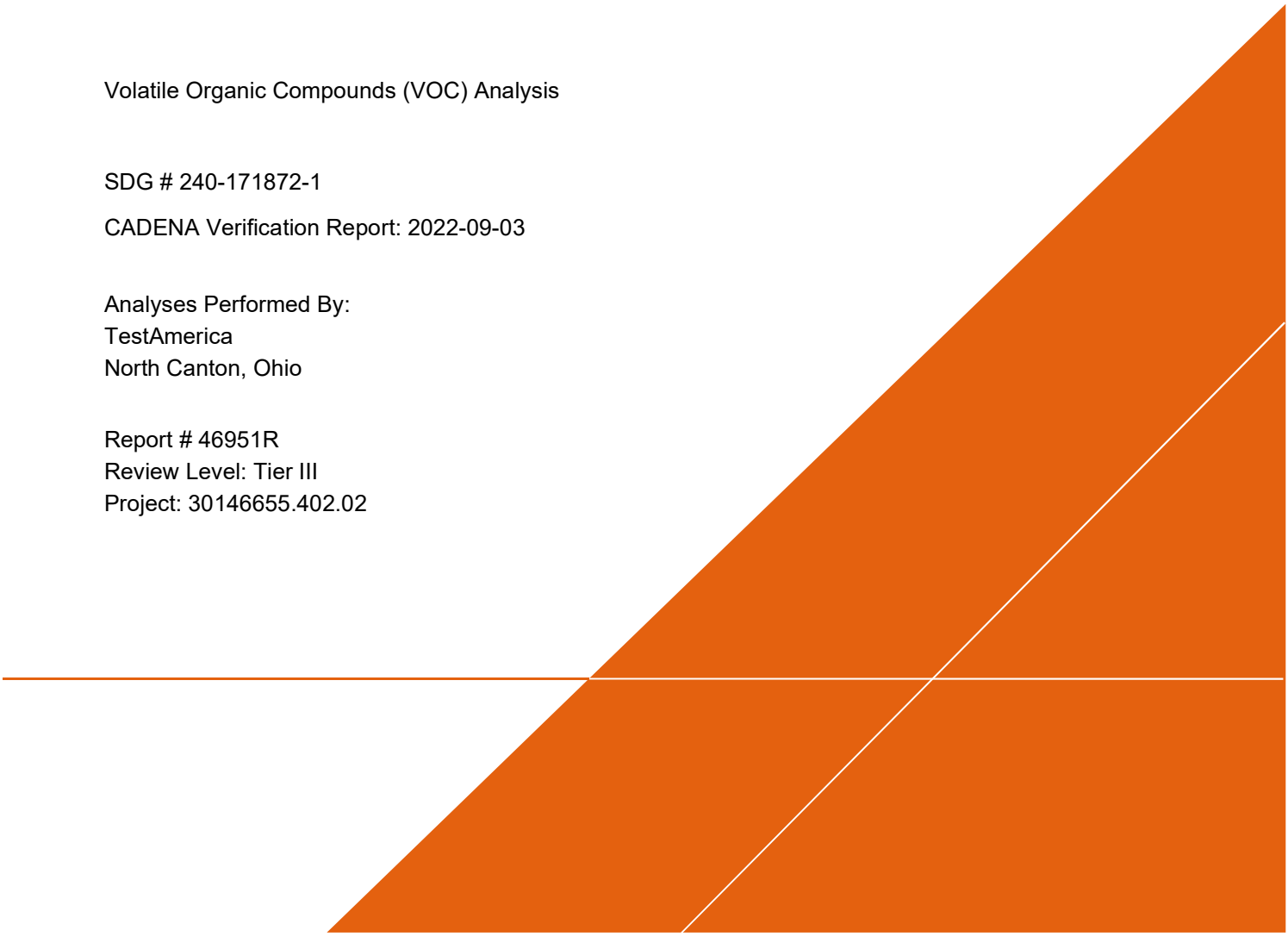
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171872-1

CADENA Verification Report: 2022-09-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46951R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171872-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_93	240-171872-1	Water	08/18/2022		X	
MW-111S_081822	240-171872-2	Water	08/18/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Pruthvi Kumar C

SIGNATURE:

DATE: September 26, 2022

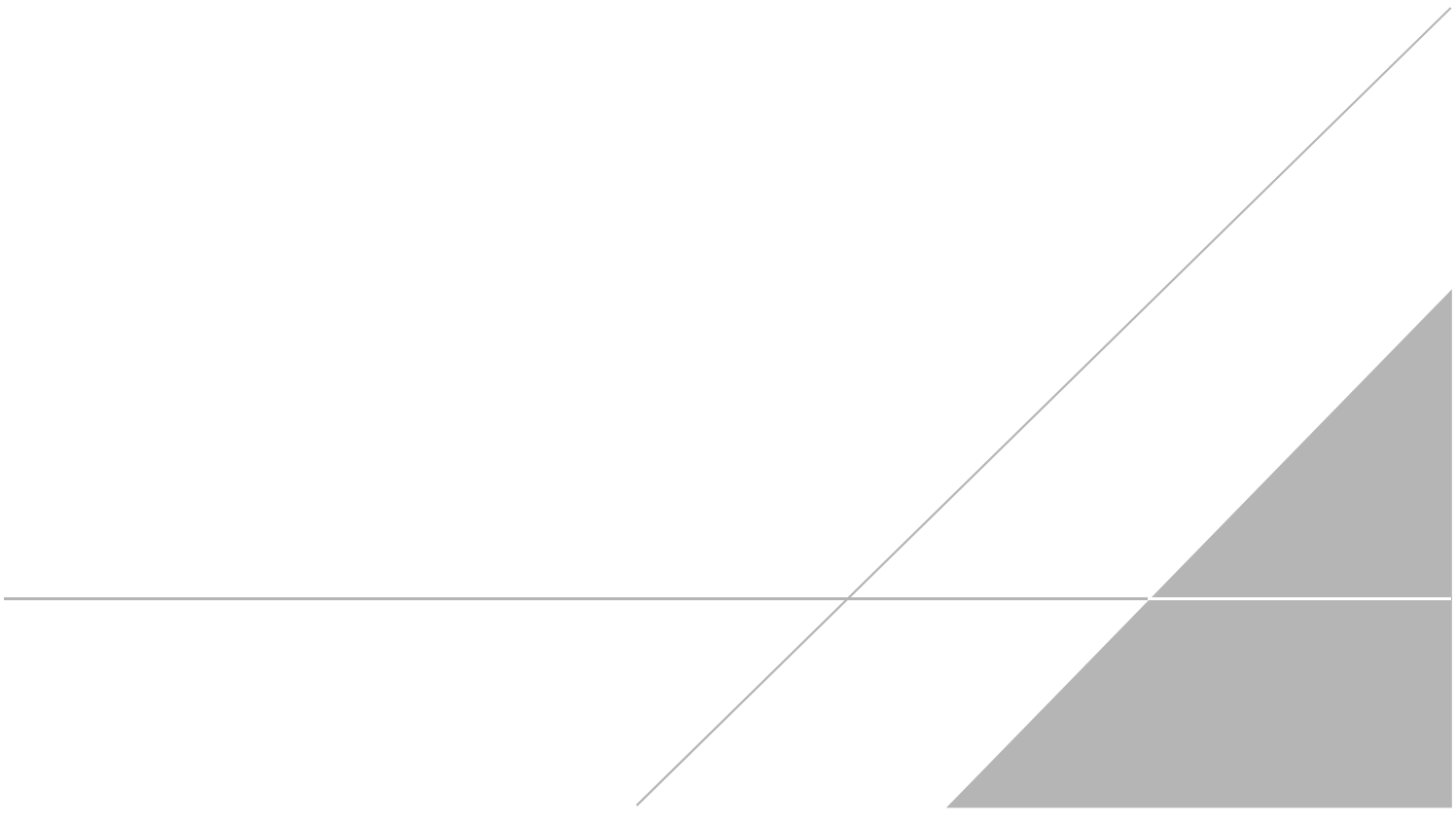
PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



Chain of Custody Record

TestAmerica

TestAmerica Laboratories, Inc.

Sample Identification	Sample Date	Sample Time	Matrix	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions
TRIP BLANK_93	—	—		N	N	X	X	X	X		1 Trip Blank
MW-11S_081822	8/18/22	1210		N	N	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171872 Chain of Custody

Relinquished by: [illegible] Company: ERAS Date/Time: 8/18/22 1440

Relinquished by: [illegible] Company: ERAS Date/Time: 8/19/22 1000

Relinquished by: [illegible] Company: ETA Date/Time: 8/19/22 [illegible]

Received by: [illegible] Company: ERAS Date/Time: 8/18/22 1440

Received by: [illegible] Company: ETA Date/Time: 8/19/22 1000

Received by: [illegible] Company: EETNC Date/Time: 8-20-22 0935

9/2/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Client Sample ID: TRIP BLANK_93
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171872-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 18:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 18:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 18:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 18:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/23/22 18:48*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 18:48*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/23/22 18:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171872-1

Client Sample ID: MW-111S_081822
Date Collected: 08/18/22 12:10
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171872-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/26/22 21:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/23/22 19:13*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/23/22 19:13*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 19:13*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 19:13*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171639-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:02:45 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Lab Chronicle 15
Certification Summary 16
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Job ID: 240-171639-1

Laboratory: Eurofins Canton

Narrative

ob Narrative
240-171639-1

Comments
No additional comments.

Receipt
The samples were received on 8/17/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171639-1	TRIP BLANK_81	Water	08/15/22 00:00	08/17/22 09:30
240-171639-2	MW-155S_081522	Water	08/15/22 09:15	08/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Client Sample ID: TRIP BLANK_81 — Lab Sample ID: 240-171639-1

No Detections.

Client Sample ID: MW-155S_081522 — Lab Sample ID: 240-171639-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Client Sample ID: TRIP BLANK_81
Date Collected: 08/15/22 00:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171639-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 18:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 18:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 18:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 18:36*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 18:36*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/18/22 18:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/18/22 18:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Client Sample ID: MW-155S_081522
Date Collected: 08/15/22 09:15
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171639-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/22/22 22:40*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 18:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 18:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 18:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*08/18/22 18:59*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/18/22 18:59*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/18/22 18:59*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/18/22 18:59*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171590-B-3 MS	Matrix Spike	106	109	104	105
240-171590-B-3 MSD	Matrix Spike Duplicate	105	108	104	103
240-171639-1	TRIP BLANK_81	111	104	103	103
240-171639-2	MW-155S_081522	113	105	104	103
LCS 240-539355/5	Lab Control Sample	109	110	106	107
MB 240-539355/8	Method Blank	108	104	100	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171639-2	MW-155S_081522	69
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539355/8
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/18/22 11:34*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 11:34*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/18/22 11:34*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 11:34*	*1*

Lab Sample ID: LCS 240-539355/5
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.9		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.1		ug/L		100	77 - 123
Tetrachloroethene	20.0	19.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	21.3		ug/L		106	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	21.3		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-171590-B-3 MS
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1000	U	20000	21700		ug/L		109	56 - 135
cis-1,2-Dichloroethene	38000		20000	58600		ug/L		104	66 - 128
Tetrachloroethene	1000	U	20000	19700		ug/L		98	62 - 131
trans-1,2-Dichloroethene	1000	U	20000	21400		ug/L		107	56 - 136
Trichloroethene	1000	U	20000	19700		ug/L		99	61 - 124
Vinyl chloride	10000		20000	30900		ug/L		104	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171590-B-3 MS
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171590-B-3 MSD
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1000	U	20000	21100		ug/L		105	56 - 135	3	26
cis-1,2-Dichloroethene	38000		20000	58300		ug/L		102	66 - 128	1	14
Tetrachloroethene	1000	U	20000	19400		ug/L		97	62 - 131	1	20
trans-1,2-Dichloroethene	1000	U	20000	21300		ug/L		107	56 - 136	0	15
Trichloroethene	1000	U	20000	19100		ug/L		95	61 - 124	3	15
Vinyl chloride	10000		20000	30500		ug/L		102	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/22/22 17:51*	*1*

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

GC/MS VOA

Analysis Batch: 539355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171639-1	TRIP BLANK_81	Total/NA	Water	8260D	
240-171639-2	MW-155S_081522	Total/NA	Water	8260D	
MB 240-539355/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539355/5	Lab Control Sample	Total/NA	Water	8260D	
240-171590-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171590-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171639-2	MW-155S_081522	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Client Sample ID: TRIP BLANK_81

Lab Sample ID: 240-171639-1

Date Collected: 08/15/22 00:00

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 18:36

Client Sample ID: MW-155S_081522

Lab Sample ID: 240-171639-2

Date Collected: 08/15/22 09:15

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 18:59
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 22:40

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171639-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christian Gamble	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_81	8/15/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1555_081522	8/15/22	915		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171639 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12066 Reston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Gamble	Arcadis	8/15/22 1330	Novi Cold Storage	Arcadis	8/15/22 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/16/22 1116	[illegible]	EETA	8/16/22 1115
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EETA	8/16/22 1120	Nancy Rogge	EETNC	8-17-22 930

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171639
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-17-22 Opened on 8-17-22

Cooler unpacked by: Nancy Boyer

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171639-1
Sample date: 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171639-1

		Sample Name:	TRIP BLANK_81				MW-155S_081522			
		Lab Sample ID:	2401716391				2401716392			
		Sample Date:	8/15/2022				8/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

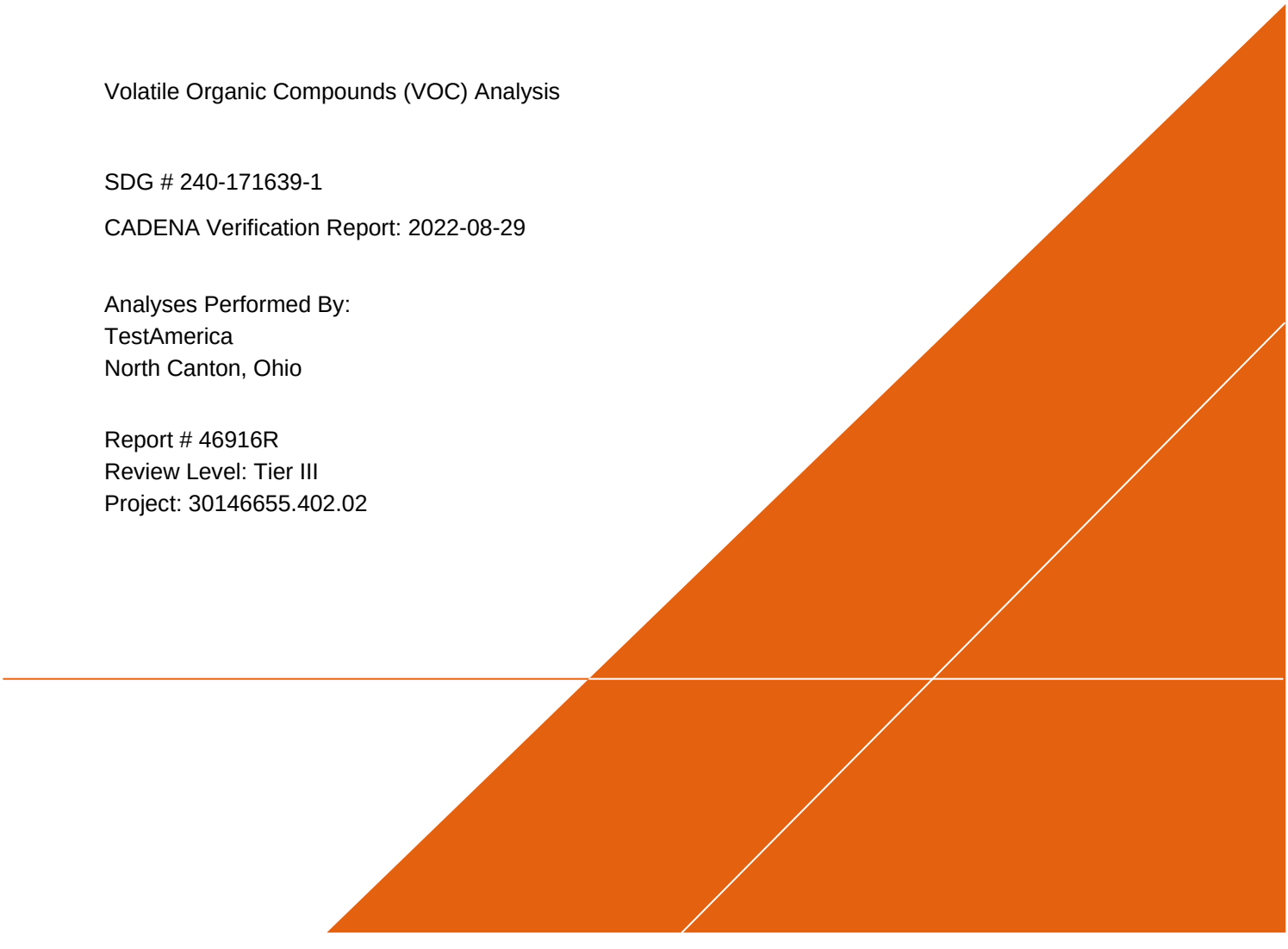
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171639-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46916R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171639-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_81	240-171639-1	Water	08/15/22		X	
MW-155S_081522	240-171639-2	Water	08/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: DW NPDES RCRA Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client
Phone: 248-994-2240	Sampler Name: Christian Gamble	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_81	8/15/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-155S_081522	8/15/22	915		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171639 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12066 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/15/22 1330	Novi Cold Storage	Arcadis	8/15/22 1330
[signature]	Arcadis	8/16/22 1116	[signature]	EE TA	8/16/22 1115
[signature]	EE TA	8/16/22 1120	Received in Laboratory by: [signature]	GET NC	8-17-22 930

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Client Sample ID: TRIP BLANK_81
Lab Sample ID: 240-171639-1

Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 18:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 18:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 18:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 18:36*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 18:36*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/18/22 18:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/18/22 18:36*	*1*

Client Sample ID: MW-155S_081522
Lab Sample ID: 240-171639-2

Date Collected: 08/15/22 09:15
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/22/22 22:40*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 18:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 18:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 18:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*08/18/22 18:59*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/18/22 18:59*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/18/22 18:59*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/18/22 18:59*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170883-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:31:29 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-170883-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170883-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) for analytical batch 537536 exceeded control criteria for Vinyl Chloride. The samples associated with this CCV were non-detect for the affected analyte. In accordance with the laboratory SOP, a low level CCV at the reporting limit (labeled as an MRL) was analyzed and the affected compound was detected; therefore the data has been reported. No further corrective action was required: TRIP BLANK_32 (240-170883-1) and MW-157S_080122 (240-170883-2).

Method 8260D: NO MS/MSD in batch 537536 due to an instrument fault: TRIP BLANK_32 (240-170883-1) and MW-157S_080122 (240-170883-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170883-1	TRIP BLANK_32	Water	08/01/22 00:00	08/03/22 09:45
240-170883-2	MW-157S_080122	Water	08/01/22 12:05	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Client Sample ID: TRIP BLANK_32 — Lab Sample ID: 240-170883-1

No Detections.

Client Sample ID: MW-157S_080122 — Lab Sample ID: 240-170883-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Client Sample ID: TRIP BLANK_32

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170883-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 18:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 18:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 18:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/04/22 18:40*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/04/22 18:40*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*08/04/22 18:40*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*08/04/22 18:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Client Sample ID: MW-157S_080122
Date Collected: 08/01/22 12:05
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170883-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 17:55*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 19:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 19:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 19:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/04/22 19:07*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/04/22 19:07*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/04/22 19:07*	*1*
Dibromofluoromethane (Surr)	*118*		*73 - 120*		*08/04/22 19:07*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170883-1	TRIP BLANK_32	109	102	111	114
240-170883-2	MW-157S_080122	112	102	109	118
LCS 240-537536/5	Lab Control Sample	92	115	115	101
MB 240-537536/8	Method Blank	104	104	108	107

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170883-2	MW-157S_080122	81
240-170886-F-2 MS	Matrix Spike	80
240-170886-F-2 MSD	Matrix Spike Duplicate	83
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537536/8
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 14:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 14:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 14:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 14:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/04/22 14:31*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 14:31*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 14:31*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/04/22 14:31*	*1*

Lab Sample ID: LCS 240-537536/5
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.7		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	22.1		ug/L		110	76 - 123
trans-1,2-Dichloroethene	20.0	19.9		ug/L		100	75 - 124
Trichloroethene	20.0	20.1		ug/L		101	70 - 122
Vinyl chloride	20.0	14.7		ug/L		74	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

GC/MS VOA

Analysis Batch: 537536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170883-1	TRIP BLANK_32	Total/NA	Water	8260D	
240-170883-2	MW-157S_080122	Total/NA	Water	8260D	
MB 240-537536/8	Method Blank	Total/NA	Water	8260D	
LCS 240-537536/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170883-2	MW-157S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-170886-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Client Sample ID: TRIP BLANK_32

Lab Sample ID: 240-170883-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 18:40	LEE	EETNC CAN

Client Sample ID: MW-157S_080122

Lab Sample ID: 240-170883-2

Date Collected: 08/01/22 12:05

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 19:07	LEE	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 17:55	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170883-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christen Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_32	~	~		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1575_080422	8/1/22	1205		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170883 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12067 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christen Garrido	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 / 947	Lei Hall	EETA	8/2/22 / 948
Relinquished by: Lei Hall	Company: EETA	Date/Time: 8/2/22 950	Received in Laboratory by:	Company:	Date/Time: 8/3/22 945

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170883

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 170883
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 810420/6	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

CK 8.3.22 STM 8.3.22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 09, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170883-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-09
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers and MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170883-1

		Sample Name:	TRIP BLANK_32				MW-157S_080122			
		Lab Sample ID:	2401708831				2401708832			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

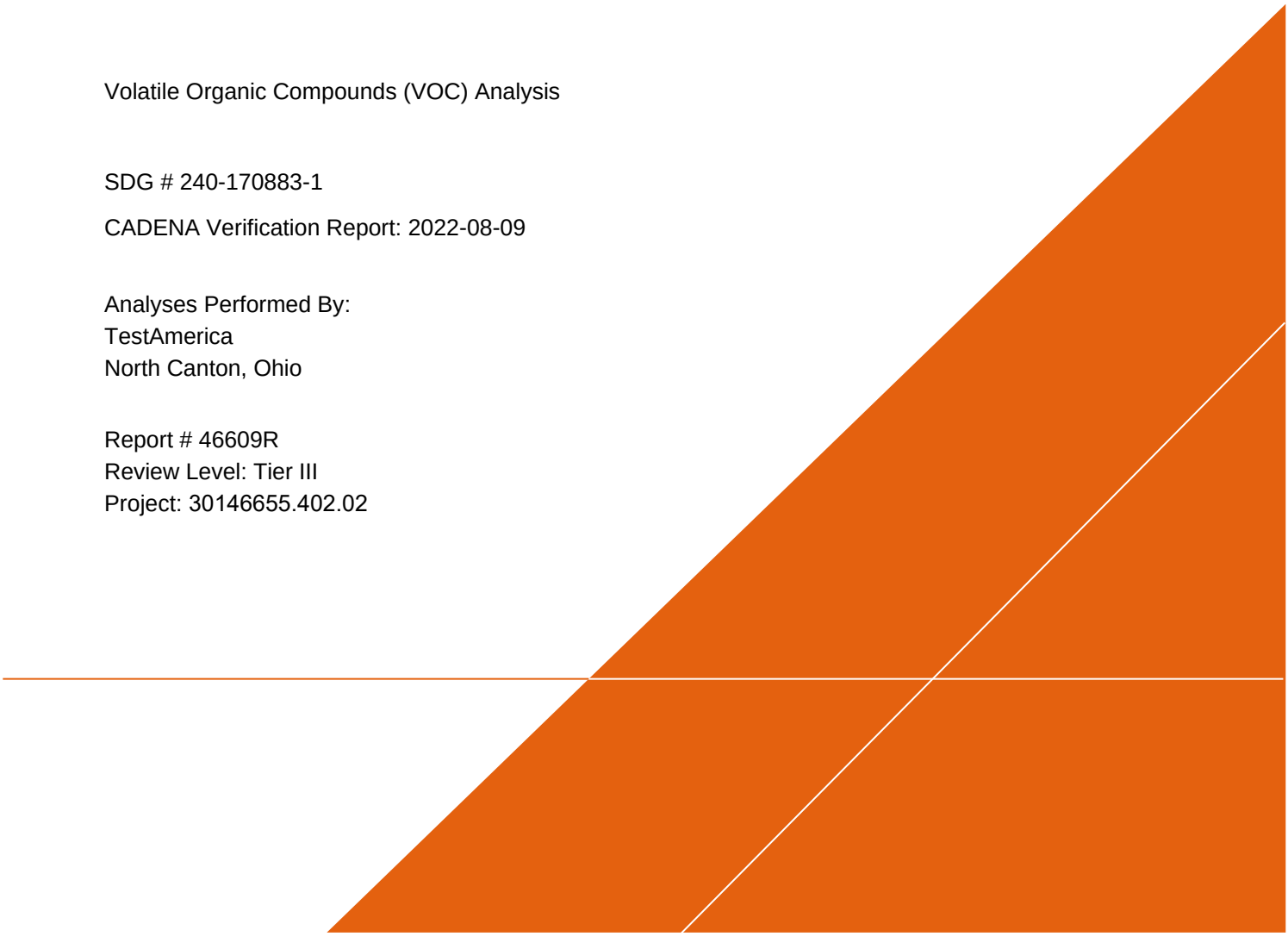
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170883-1

CADENA Verification Report: 2022-08-09

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46609R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170883-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_32	240-170883-1	Water	08/01/22		X	
MW-157S_080122	240-170883-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_22 MW-157S_080122	Continuous Calibration Verification %D	Vinyl chloride	-24.2%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 12, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Christen Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_32	✓	✓		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-157S_080422	8/1/22	1205		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170883 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12067 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christen Garrido	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
	ARCADIS	8/2/22 947		EETA	8/2/22 948
Jeri Hall	EETA	8/2/22 950	Received in Laboratory by:	EETA	8/3/22 945

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08/09/2022

Client Sample ID: TRIP BLANK_32
Lab Sample ID: 240-170883-1
Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 18:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 18:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 18:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:40	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/04/22 18:40*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/04/22 18:40*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*08/04/22 18:40*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*08/04/22 18:40*	*1*

Client Sample ID: MW-157S_080122
Lab Sample ID: 240-170883-2
Date Collected: 08/01/22 12:05
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 17:55*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 19:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 19:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 19:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:07	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/04/22 19:07*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/04/22 19:07*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/04/22 19:07*	*1*
Dibromofluoromethane (Surr)	*118*		*73 - 120*		*08/04/22 19:07*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171866-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/31/2022 2:00:10 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171866-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171866-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 12:31 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171866-1	TRIP BLANK_100	Water	08/18/22 00:00	08/20/22 12:31
240-171866-2	MW-143S_081822	Water	08/18/22 13:05	08/20/22 12:31

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Client Sample ID: TRIP BLANK_100 — Lab Sample ID: 240-171866-1

No Detections.

Client Sample ID: MW-143S_081822 — Lab Sample ID: 240-171866-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Client Sample ID: TRIP BLANK_100
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 12:31

Lab Sample ID: 240-171866-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 16:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 16:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 16:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 16:18*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/23/22 16:18*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 16:18*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 16:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Client Sample ID: MW-143S_081822
Date Collected: 08/18/22 13:05
Date Received: 08/20/22 12:31

Lab Sample ID: 240-171866-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 04:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/26/22 04:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 16:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 16:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 16:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 16:43*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 16:43*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 16:43*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 16:43*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171824-E-2 MS	Matrix Spike	87	90	96	88
240-171824-H-2 MSD	Matrix Spike Duplicate	86	90	93	86
240-171866-1	TRIP BLANK_100	89	96	95	88
240-171866-2	MW-143S_081822	89	95	93	87
LCS 240-539814/5	Lab Control Sample	87	93	95	86
MB 240-539814/8	Method Blank	89	93	95	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171824-G-2 MS	Matrix Spike	90
240-171824-M-2 MSD	Matrix Spike Duplicate	90
240-171866-2	MW-143S_081822	92
LCS 240-540264/3	Lab Control Sample	90
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539814/8
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 12:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 12:03*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/23/22 12:03*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 12:03*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 12:03*	*1*

Lab Sample ID: LCS 240-539814/5
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.3		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	18.4		ug/L		92	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	20.0		ug/L		100	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.9		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.3		ug/L		86	61 - 124
Vinyl chloride	1.0	U	20.0	17.3		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171824-H-2 MSD
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	20.3		ug/L		102	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 136	6	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540264/4
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-G-2 MS
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

GC/MS VOA

Analysis Batch: 539814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171866-1	TRIP BLANK_100	Total/NA	Water	8260D	
240-171866-2	MW-143S_081822	Total/NA	Water	8260D	
MB 240-539814/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539814/5	Lab Control Sample	Total/NA	Water	8260D	
240-171824-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171824-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171866-2	MW-143S_081822	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171824-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Client Sample ID: TRIP BLANK_100

Lab Sample ID: 240-171866-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/20/22 12:31

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 16:18

Client Sample ID: MW-143S_081822

Lab Sample ID: 240-171866-2

Date Collected: 08/18/22 13:05

Matrix: Water

Date Received: 08/20/22 12:31

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 16:43
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 04:34

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171866-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
Phone: 248-994-2240	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Project Name: Ford LTP Off-Site	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Number: 30080642.402.04	Method of Shipment/Carrier:			
PO # 30080642.402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_100	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1435-081822	8/18/22	1305		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171866 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12069 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	ARCADIS	8/18/22 1440	Received by: NOVI COLD STORAGE	ARCADIS	8/18/22 1440
Relinquished by:	ARCADIS	8/19/22 / 1000	Received by:	ETA	8/19/22 / 1000
Relinquished by:	EETMI	8/19/22 (1:40	Received in Laboratory by:	EETNC	8-20-22 0935

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8/31/2022

171866

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP
Cooler Received on 8-20-22 Opened on 8-20-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Cooler unpacked by: (TMC)

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	N
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171866-1
Sample date: 2022-08-18
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171866-1

		Sample Name:	TRIP BLANK_100				MW-143S_081822			
		Lab Sample ID:	2401718661				2401718662			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

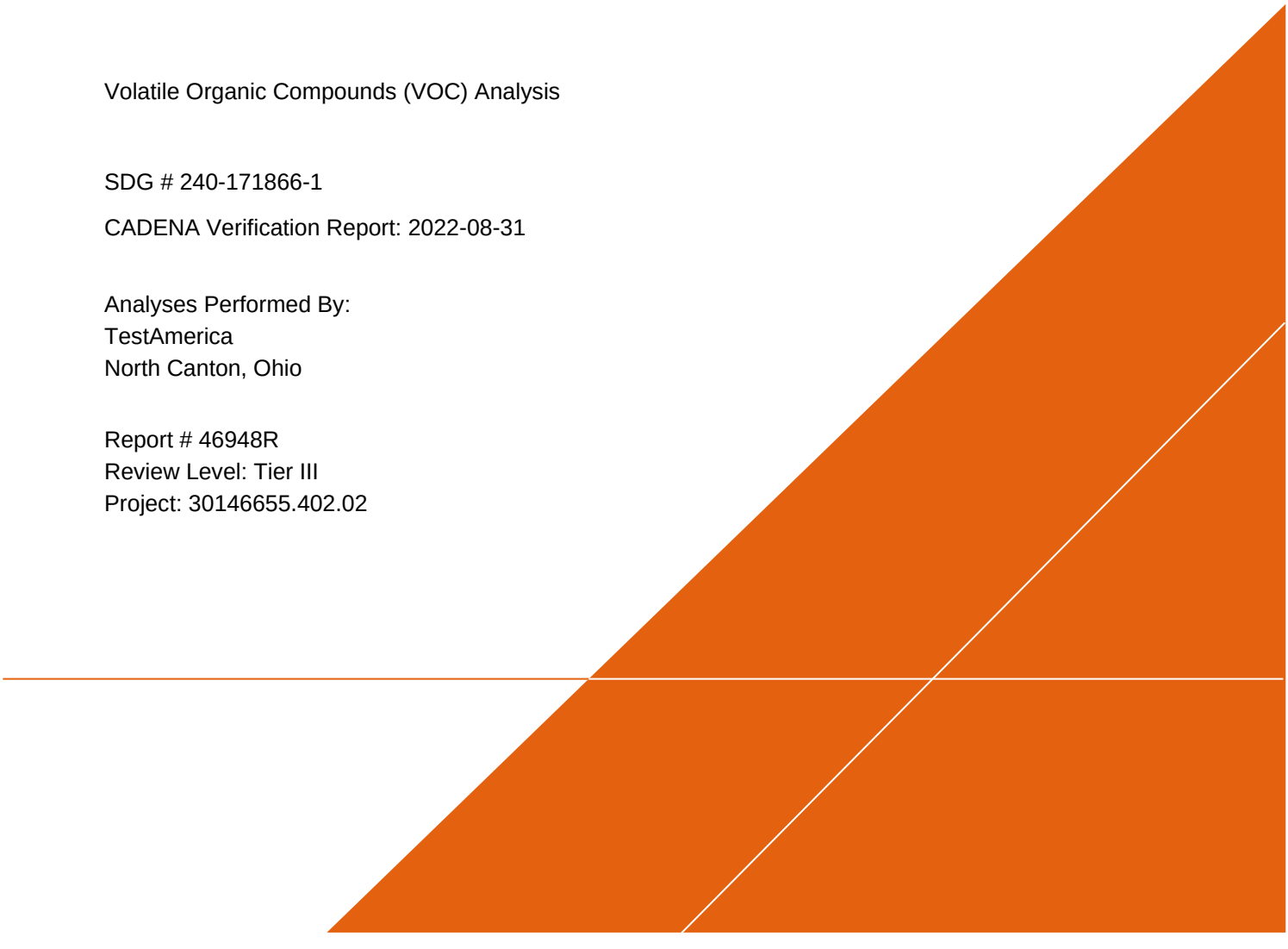
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171866-1

CADENA Verification Report: 2022-08-31

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46948R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171866-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_100	240-171866-1	Water	08/18/22		X	
MW-143S_081822	240-171866-2	Water	08/18/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_100	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1435_081822	8/18/22	1305		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171866 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12069 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Lottie Jay	ARCADIS	8/18/22 1440	Received by: NOVI COLD STORAGE	ARCADIS	8/18/22 1440
Relinquished by: Thuy Ha	ARCADIS	8/19/22 1000	Received by: Juan Rivera	ETA	8/19/22 1000
Relinquished by:	ETA	8/19/22 1100	Received in Laboratory by:	EETNC	8-20-22 0935

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Client Sample ID: TRIP BLANK_100
Lab Sample ID: 240-171866-1
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 12:31

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 16:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 16:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 16:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 16:18*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/23/22 16:18*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 16:18*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 16:18*	*1*

Client Sample ID: MW-143S_081822
Lab Sample ID: 240-171866-2
Date Collected: 08/18/22 13:05
Matrix: Water
Date Received: 08/20/22 12:31

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 04:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/26/22 04:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 16:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 16:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 16:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 16:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 16:43*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 16:43*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 16:43*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 16:43*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171584-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:50:05 AM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171584-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171584-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-539260 was outside the method criteria for the following analyte(s): Tetrachloroethene. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated. TRIP BLANK_23 (240-171584-1), MW-115S_081022 (240-171584-2) and (CCVIS 240-539260/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171584-1	TRIP BLANK_23	Water	08/10/22 00:00	08/16/22 09:00
240-171584-2	MW-115S_081022	Water	08/10/22 15:46	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Client Sample ID: TRIP BLANK_23 — Lab Sample ID: 240-171584-1

No Detections.

Client Sample ID: MW-115S_081022 — Lab Sample ID: 240-171584-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Client Sample ID: TRIP BLANK_23
Date Collected: 08/10/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171584-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/17/22 19:11*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 19:11*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 19:11*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/17/22 19:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Client Sample ID: MW-115S_081022
Date Collected: 08/10/22 15:46
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171584-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/20/22 22:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 19:34*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/17/22 19:34*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/17/22 19:34*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/17/22 19:34*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171570-A-3 MS	Matrix Spike	107	104	101	110
240-171570-A-3 MSD	Matrix Spike Duplicate	100	90	95	103
240-171584-1	TRIP BLANK_23	102	90	91	108
240-171584-2	MW-115S_081022	96	83	90	105
LCS 240-539260/5	Lab Control Sample	92	91	90	100
MB 240-539260/8	Method Blank	97	90	91	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171584-2	MW-115S_081022	70
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539260/8
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 15:40*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 15:40*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 15:40*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 15:40*	*1*

Lab Sample ID: LCS 240-539260/5
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	77 - 123
Tetrachloroethene	20.0	23.0		ug/L		115	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	22.5		ug/L		113	70 - 122
Vinyl chloride	20.0	18.8		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	500	U	10000	10300		ug/L		103	56 - 135
cis-1,2-Dichloroethene	500	U	10000	10200		ug/L		102	66 - 128
Tetrachloroethene	500	U	10000	10400		ug/L		104	62 - 131
trans-1,2-Dichloroethene	500	U	10000	9700		ug/L		97	56 - 136
Trichloroethene	500	U	10000	10200		ug/L		102	61 - 124
Vinyl chloride	500	U	10000	10300		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MSD
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	500	U	10000	10900		ug/L		109	56 - 135	6	26
cis-1,2-Dichloroethene	500	U	10000	11300		ug/L		113	66 - 128	10	14
Tetrachloroethene	500	U	10000	11200		ug/L		112	62 - 131	7	20
trans-1,2-Dichloroethene	500	U	10000	10400		ug/L		104	56 - 136	7	15
Trichloroethene	500	U	10000	10600		ug/L		106	61 - 124	4	15
Vinyl chloride	500	U	10000	10700		ug/L		107	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.4		ug/L		104	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

GC/MS VOA

Analysis Batch: 539260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171584-1	TRIP BLANK_23	Total/NA	Water	8260D	
240-171584-2	MW-115S_081022	Total/NA	Water	8260D	
MB 240-539260/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539260/5	Lab Control Sample	Total/NA	Water	8260D	
240-171570-A-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171570-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171584-2	MW-115S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Client Sample ID: TRIP BLANK_23

Lab Sample ID: 240-171584-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 19:11

Client Sample ID: MW-115S_081022

Lab Sample ID: 240-171584-2

Date Collected: 08/10/22 15:46

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 19:34
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 22:39

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171584-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks (✓), 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_23	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1155_081022	8/10/22	1546		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171584 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12070 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	8/12/22 1301	Novi Cold Storage	Arcadis	8/12/22 1301
[illegible]	Arcadis	8/15/22 1005	[illegible]	EETA	8/15/22 1010
[illegible]	EETA	8/15/22 10:00	Received in Laboratory by: [illegible]	EETNC	8-16-22 0900

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171584
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by: DMC

Cooler Received on 5-16-22 Opened on 5-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171584

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171584-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171584-1

		Sample Name:	TRIP BLANK_23				MW-115S_081022			
		Lab Sample ID:	2401715841				2401715842			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

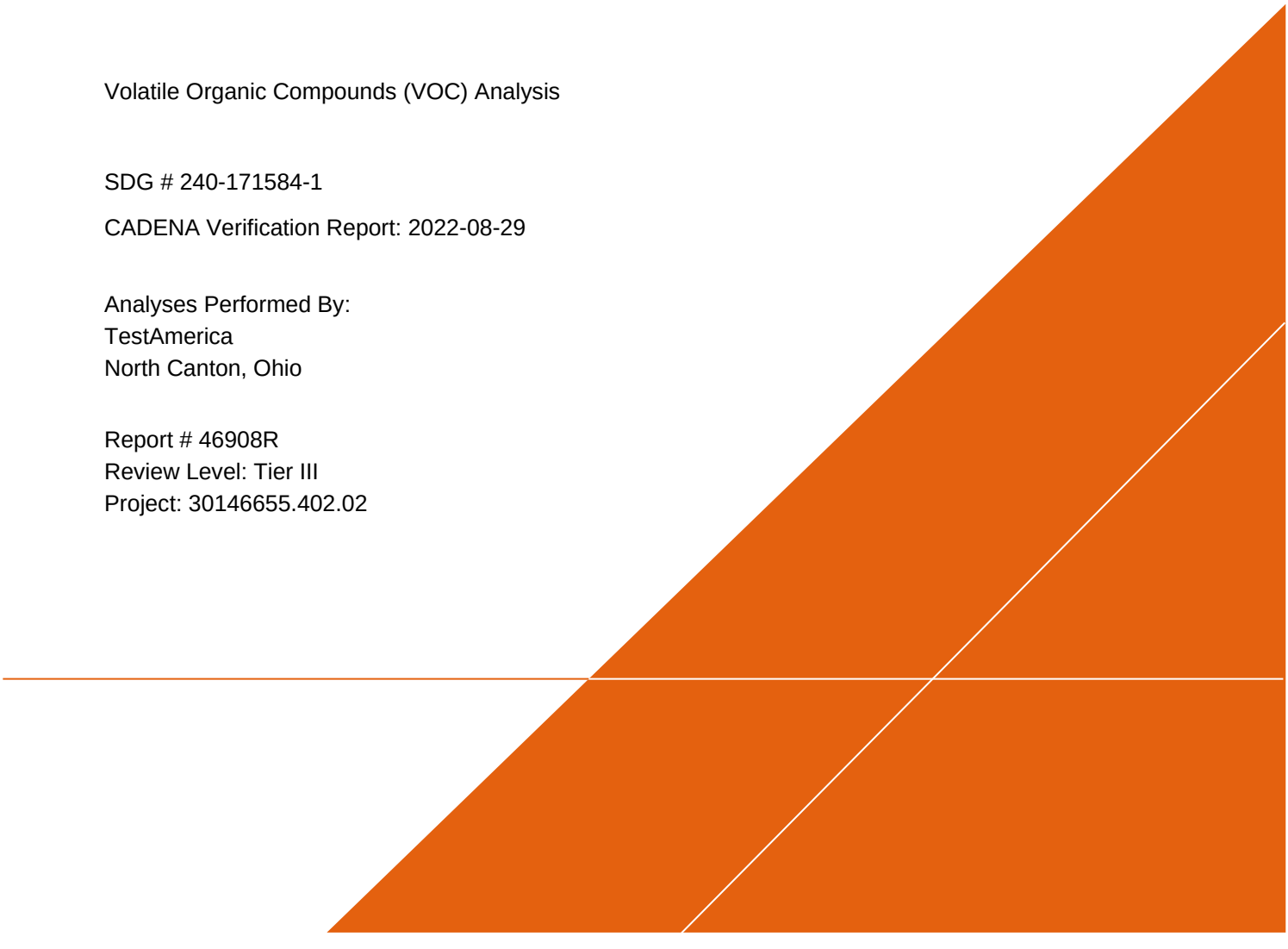
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171584-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46908R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171584-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_23	240-171584-1	Water	08/10/22		X	
MW-115S_081022	240-171584-2	Water	08/10/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_23 MW-115S_081022	Continuous Calibration Verification %D	Tetrachloroethene	+22.6%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_23	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1155_081022	8/10/22	1546		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171584 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12070 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	8/12/22 1301	Novi Cold Storage	Arcadis	8/12/22 1301
[illegible]	Arcadis	8/15/22 1005	[illegible]	EETA	8/15/22 10:10
[illegible]	EETA	8/15/22 10:00	[illegible]	EETNC	8-16-22 0900

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Client Sample ID: TRIP BLANK_23
Lab Sample ID: 240-171584-1

Date Collected: 08/10/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/17/22 19:11*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 19:11*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 19:11*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/17/22 19:11*	*1*

Client Sample ID: MW-115S_081022
Lab Sample ID: 240-171584-2

Date Collected: 08/10/22 15:46
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/20/22 22:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 19:34*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/17/22 19:34*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/17/22 19:34*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/17/22 19:34*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171847-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/31/2022 1:50:23 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171847-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171847-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171847-1	TRIP BLANK_04	Water	08/18/22 00:00	08/20/22 09:35
240-171847-2	MW-123S_081822	Water	08/18/22 10:30	08/20/22 09:35

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Client Sample ID: TRIP BLANK_04 — Lab Sample ID: 240-171847-1

No Detections.

Client Sample ID: MW-123S_081822 — Lab Sample ID: 240-171847-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.7		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Client Sample ID: TRIP BLANK_04
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171847-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 22:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 22:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 22:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 22:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/23/22 22:00*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/23/22 22:00*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/23/22 22:00*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/23/22 22:00*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Client Sample ID: MW-123S_081822

Date Collected: 08/18/22 10:30
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171847-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 23:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 22:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 22:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 22:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:24	1
Vinyl chloride	**3.7**		1.0	0.45	ug/L			08/23/22 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/23/22 22:24*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/23/22 22:24*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/23/22 22:24*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/23/22 22:24*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171769-E-8 MS	Matrix Spike	92	90	99	99
240-171769-H-8 MSD	Matrix Spike Duplicate	91	89	98	99
240-171847-1	TRIP BLANK_04	102	92	100	105
240-171847-2	MW-123S_081822	100	92	101	105
LCS 240-539802/5	Lab Control Sample	94	90	94	97
MB 240-539802/8	Method Blank	96	87	95	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171824-G-2 MS	Matrix Spike	90
240-171824-M-2 MSD	Matrix Spike Duplicate	90
240-171847-2	MW-123S_081822	92
LCS 240-540264/3	Lab Control Sample	90
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539802/8
Matrix: Water
Analysis Batch: 539802

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 13:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 13:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 13:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 13:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/23/22 13:49*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/23/22 13:49*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 13:49*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/23/22 13:49*	*1*

Lab Sample ID: LCS 240-539802/5
Matrix: Water
Analysis Batch: 539802

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.3		ug/L		106	63 - 134
cis-1,2-Dichloroethene	20.0	21.3		ug/L		107	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		94	76 - 123
trans-1,2-Dichloroethene	20.0	20.5		ug/L		102	75 - 124
Trichloroethene	20.0	20.8		ug/L		104	70 - 122
Vinyl chloride	20.0	18.4		ug/L		92	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-171769-E-8 MS
Matrix: Water
Analysis Batch: 539802

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	1.0	U	20.0	18.0		ug/L		90	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171769-H-8 MSD
Matrix: Water
Analysis Batch: 539802

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	1.0	U	20.0	18.3		ug/L		91	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540264/4
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-G-2 MS
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

GC/MS VOA

Analysis Batch: 539802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171847-1	TRIP BLANK_04	Total/NA	Water	8260D	
240-171847-2	MW-123S_081822	Total/NA	Water	8260D	
MB 240-539802/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539802/5	Lab Control Sample	Total/NA	Water	8260D	
240-171769-E-8 MS	Matrix Spike	Total/NA	Water	8260D	
240-171769-H-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171847-2	MW-123S_081822	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171824-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Client Sample ID: TRIP BLANK_04

Lab Sample ID: 240-171847-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539802	HMB	EET CAN	08/23/22 22:00

Client Sample ID: MW-123S_081822

Lab Sample ID: 240-171847-2

Date Collected: 08/18/22 10:30

Matrix: Water

Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539802	HMB	EET CAN	08/23/22 22:24
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/25/22 23:30

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171847-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK 04	8/18/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-123S_081822	08/18/22	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171847 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12675 Brewster Side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/18/22/1400	Arcadis Cold Storage	Arcadis	08/18/22/1400
	ARCADIS	8/18/22 / 1000	Gina Rivera	ETA	8/19/22 1000
	EZ TA	8/19/22 11:00	Received in Laboratory by:	EETNC	8-20-22 0935

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8/31/2022

171847

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP

Cooler unpacked by: TME

Cooler Received on 8-20-22 Opened on 8-20-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	N
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420IG	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171847-1
Sample date: 2022-08-18
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171847-1

		Sample Name:	TRIP BLANK_04				MW-123S_081822			
		Lab Sample ID:	2401718471				2401718472			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.7	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

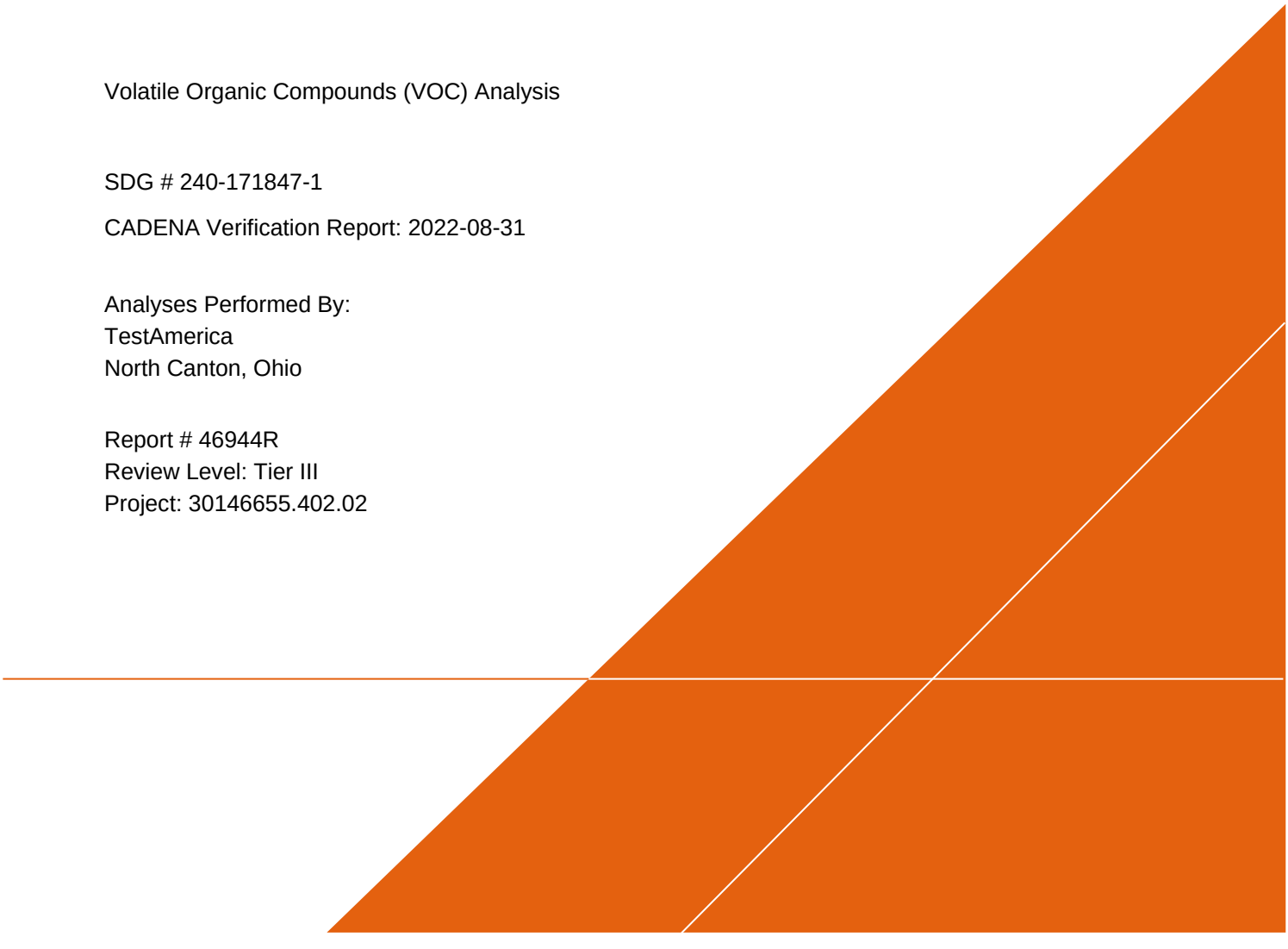
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171847-1

CADENA Verification Report: 2022-08-31

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46944R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171847-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_04	240-171847-1	Water	08/18/22		X	
MW-123S_081822	240-171847-2	Water	08/18/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager:	Site Contact:	Lab Contact:	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Kris Hinskey	Christina Weaver	Mike DelMonico	
Address: 28550 Cabot Drive, Suite 500		Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240		Sampler Name: Sam Sukaria	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site		Method of Shipment/Carrier:			
Project Number: 30080642.402.04		Shipping/Tracking No:			
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK 04	8/18/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-123S_081822	08/18/22	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171847 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12675 Brewster Sideyard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #5203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/18/22/1400	Arcadis Cold Storage	Arcadis	08/18/22/1400
	ARCADIS	8/18/22 / 1000	Gina Rivera	ETA	8/19/22 1000
	EETA	8/19/22 11:00		EETNC	8-20-22 0935

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08/31/2022

Client Sample ID: TRIP BLANK_04
Lab Sample ID: 240-171847-1
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 09:35

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 22:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 22:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 22:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 22:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/23/22 22:00*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/23/22 22:00*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/23/22 22:00*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/23/22 22:00*	*1*

Client Sample ID: MW-123S_081822
Lab Sample ID: 240-171847-2
Date Collected: 08/18/22 10:30
Matrix: Water
Date Received: 08/20/22 09:35

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 23:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 22:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 22:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 22:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 22:24	1
Vinyl chloride	**3.7**		1.0	0.45	ug/L			08/23/22 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/23/22 22:24*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/23/22 22:24*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/23/22 22:24*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/23/22 22:24*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171581-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:42:39 AM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Job ID: 240-171581-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171581-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-539260 was outside the method criteria for the following analyte(s): Tetrachloroethene. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated. TRIP BLANK_03 (240-171581-1), MW-148S_081222 (240-171581-2) and (CCVIS 240-539260/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171581-1	TRIP BLANK_03	Water	08/12/22 00:00	08/16/22 09:00
240-171581-2	MW-148S_081222	Water	08/12/22 13:40	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Client Sample ID: TRIP BLANK_03 — Lab Sample ID: 240-171581-1

No Detections.

Client Sample ID: MW-148S_081222 — Lab Sample ID: 240-171581-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.0		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Client Sample ID: TRIP BLANK_03
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171581-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 17:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 17:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 17:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 17:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/17/22 17:37*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 17:37*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 17:37*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/17/22 17:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Client Sample ID: MW-148S_081222
Date Collected: 08/12/22 13:40
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171581-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/20/22 21:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
Vinyl chloride	**1.0**		1.0	0.45	ug/L			08/17/22 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 18:00*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 18:00*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/17/22 18:00*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/17/22 18:00*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171570-A-3 MS	Matrix Spike	107	104	101	110
240-171570-A-3 MSD	Matrix Spike Duplicate	100	90	95	103
240-171581-1	TRIP BLANK_03	101	90	94	106
240-171581-2	MW-148S_081222	99	90	92	107
LCS 240-539260/5	Lab Control Sample	92	91	90	100
MB 240-539260/8	Method Blank	97	90	91	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171581-2	MW-148S_081222	74
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539260/8
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 15:40*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 15:40*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 15:40*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 15:40*	*1*

Lab Sample ID: LCS 240-539260/5
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	77 - 123
Tetrachloroethene	20.0	23.0		ug/L		115	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	22.5		ug/L		113	70 - 122
Vinyl chloride	20.0	18.8		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	500	U	10000	10300		ug/L		103	56 - 135
cis-1,2-Dichloroethene	500	U	10000	10200		ug/L		102	66 - 128
Tetrachloroethene	500	U	10000	10400		ug/L		104	62 - 131
trans-1,2-Dichloroethene	500	U	10000	9700		ug/L		97	56 - 136
Trichloroethene	500	U	10000	10200		ug/L		102	61 - 124
Vinyl chloride	500	U	10000	10300		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MSD
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	500	U	10000	10900		ug/L		109	56 - 135	6	26
cis-1,2-Dichloroethene	500	U	10000	11300		ug/L		113	66 - 128	10	14
Tetrachloroethene	500	U	10000	11200		ug/L		112	62 - 131	7	20
trans-1,2-Dichloroethene	500	U	10000	10400		ug/L		104	56 - 136	7	15
Trichloroethene	500	U	10000	10600		ug/L		106	61 - 124	4	15
Vinyl chloride	500	U	10000	10700		ug/L		107	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

GC/MS VOA

Analysis Batch: 539260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171581-1	TRIP BLANK_03	Total/NA	Water	8260D	
240-171581-2	MW-148S_081222	Total/NA	Water	8260D	
MB 240-539260/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539260/5	Lab Control Sample	Total/NA	Water	8260D	
240-171570-A-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171570-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171581-2	MW-148S_081222	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Client Sample ID: TRIP BLANK_03

Lab Sample ID: 240-171581-1

Date Collected: 08/12/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 17:37

Client Sample ID: MW-148S_081222

Lab Sample ID: 240-171581-2

Date Collected: 08/12/22 13:40

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 18:00
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 21:51

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171581-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_03	08/12/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-148S_08122	08/12/22	1340		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171581 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments: Brewster

Sample Address: 12086 Boston fastest side yard

Submit all results through Cadena at jtomalia@cadenco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/12/22/1610	Arcadis cold Stor.	Arcadis	08/12/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/15/22 10:00		EETNC	8-16-22 0900

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171581
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by: DMR

Cooler Received on 8-16-22 Opened on 8-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water ☑ None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171581

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171581-1
Sample date: 2022-08-12
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171581-1

		Sample Name:	TRIP BLANK_03				MW-148S_081222			
		Lab Sample ID:	2401715811				2401715812			
		Sample Date:	8/12/2022				8/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.0	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

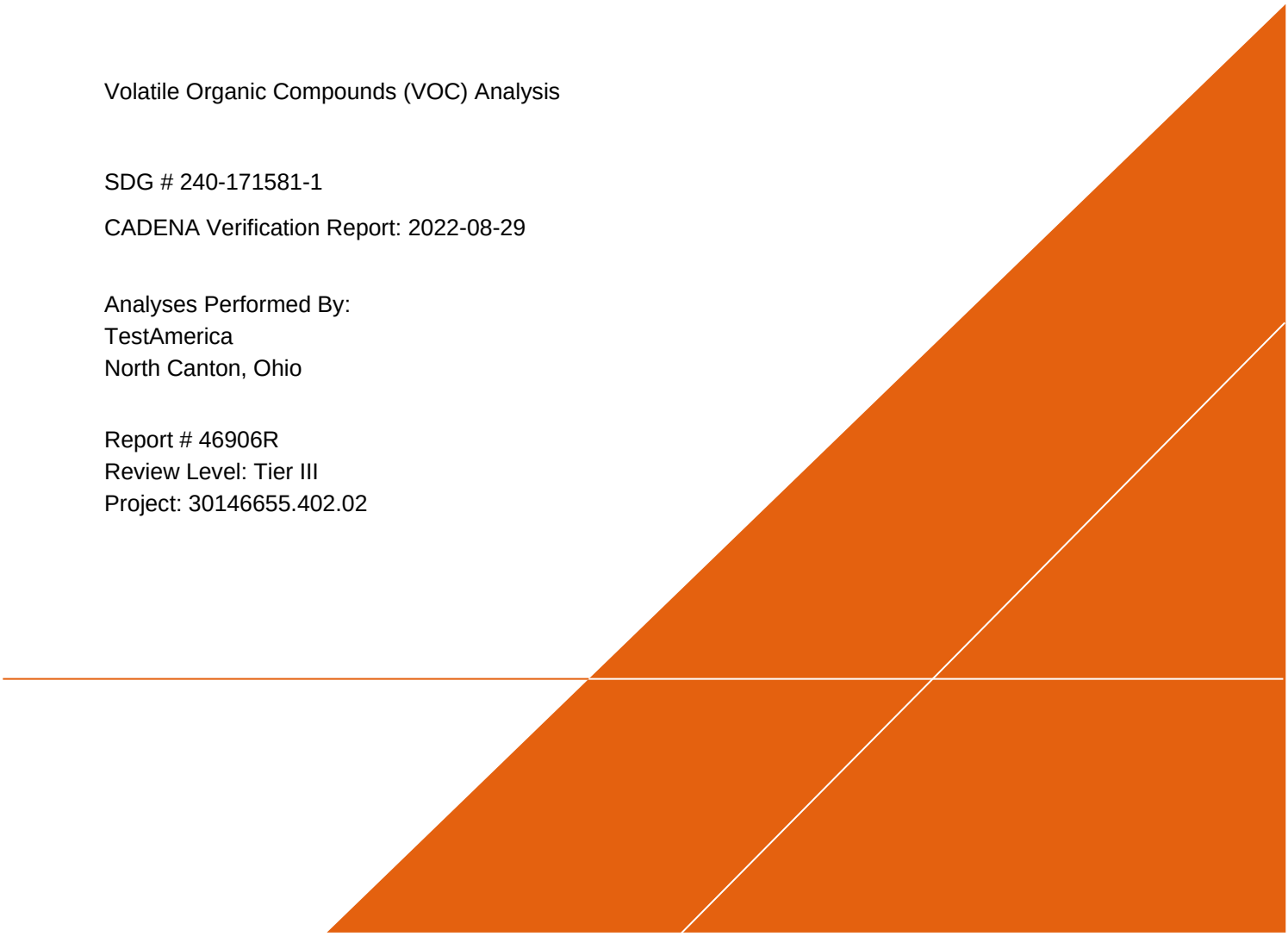
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171581-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46906R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171581-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_03	240-171581-1	Water	08/12/22		X	
MW-148S_081222	240-171581-2	Water	08/12/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_03 MW-148S_081222	Continuous Calibration Verification %D	Tetrachloroethene	+22.6%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sykaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_03	08/12/22	—		2						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-148S_08122	8/12/22	1340		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171581 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments: Brewster

Sample Address: 12086 ~~Boston~~ Fastest side yard

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaria	Arcadis	08/12/22/1610	Arcadis cold Stor.	Arcadis	08/12/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/15/22 10:00		EETNC	8-16-22 0900

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Client Sample ID: TRIP BLANK_03
Lab Sample ID: 240-171581-1
Date Collected: 08/12/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 17:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 17:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 17:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 17:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/17/22 17:37*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 17:37*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 17:37*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/17/22 17:37*	*1*

Client Sample ID: MW-148S_081222
Lab Sample ID: 240-171581-2
Date Collected: 08/12/22 13:40
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/20/22 21:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
Vinyl chloride	**1.0**		1.0	0.45	ug/L			08/17/22 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 18:00*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 18:00*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/17/22 18:00*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/17/22 18:00*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171144-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 2:14:47 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Job ID: 240-171144-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171144-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-117S_080422 (240-171144-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171144-1	TRIP BLANK_56	Water	08/04/22 00:00	08/06/22 10:00
240-171144-2	MW-117S_080422	Water	08/04/22 12:10	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Client Sample ID: TRIP BLANK_56 — Lab Sample ID: 240-171144-1

No Detections.

Client Sample ID: MW-117S_080422 — Lab Sample ID: 240-171144-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Client Sample ID: TRIP BLANK_56

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171144-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 14:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 14:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 14:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 14:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 14:39*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/10/22 14:39*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/10/22 14:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Client Sample ID: MW-117S_080422
Date Collected: 08/04/22 12:10
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171144-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/10/22 16:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 18:59*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 18:59*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 18:59*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/10/22 18:59*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171144-1	TRIP BLANK_56	105	97	103	111
240-171144-2	MW-117S_080422	104	97	104	111
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171144-2	MW-117S_080422	81
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171144-2	MW-117S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171144-1	TRIP BLANK_56	Total/NA	Water	8260D	
240-171144-2	MW-117S_080422	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Client Sample ID: TRIP BLANK_56

Lab Sample ID: 240-171144-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 14:39

Client Sample ID: MW-117S_080422

Lab Sample ID: 240-171144-2

Date Collected: 08/04/22 12:10

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 18:59
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 16:11

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_56	8/4/22	~		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1175_080422	8/4/22	1210		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171144 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12089 Baster Rust

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/4/22 1300	Novi Cold Storage	Arcadis	8/4/22 1300
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/5/22 1000	J. Hall	EEGT	8/5/22 1001
Relinquished by: J. Hall	Company: EEGT	Date/Time: 8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171144**
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171144

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171144-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171144-1

		Sample Name:	TRIP BLANK_56				MW-117S_080422			
		Lab Sample ID:	2401711441				2401711442			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

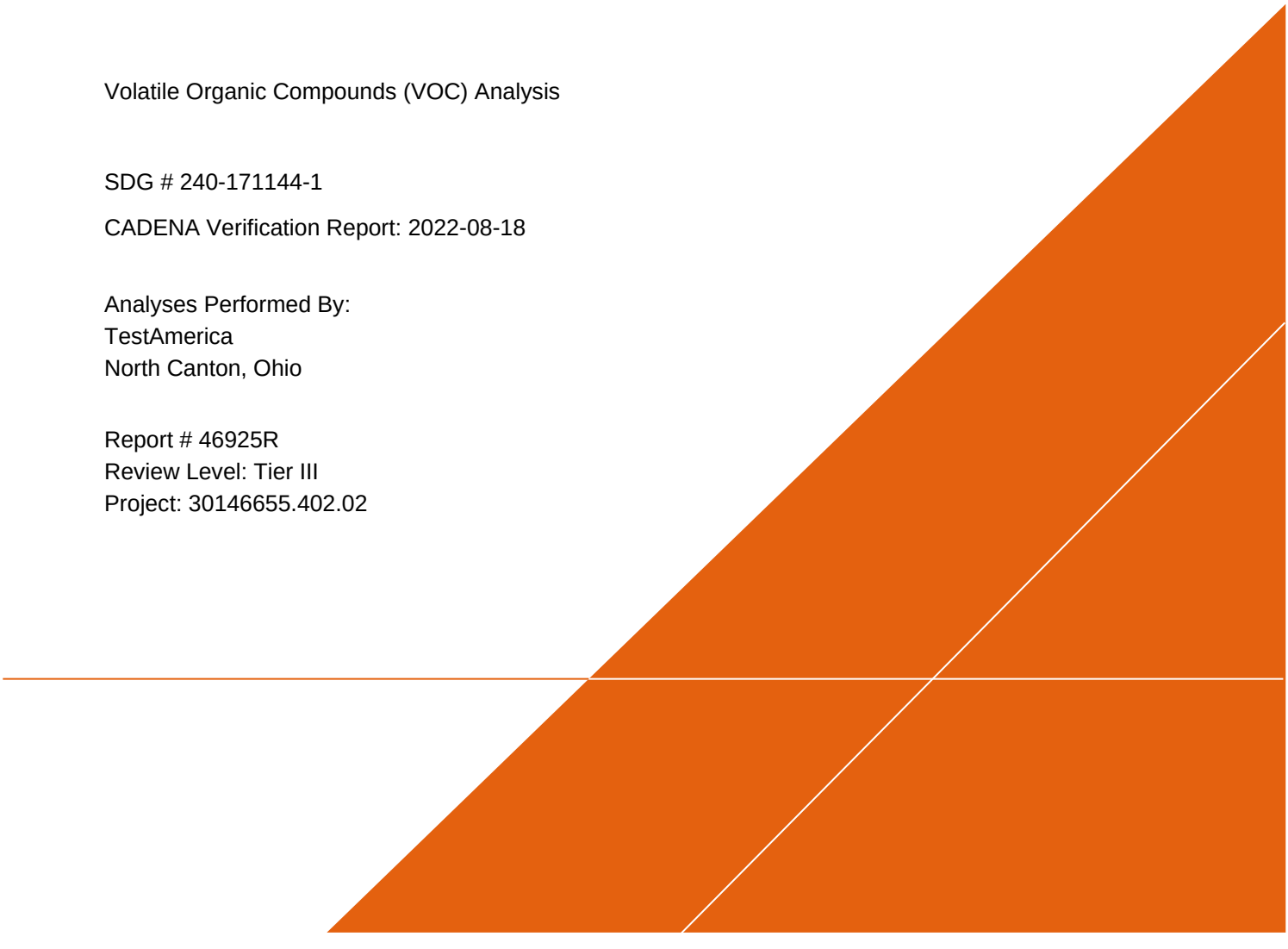
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171144-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46925R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171144-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_56	240-171144-1	Water	08/04/22		X	
MW-117S_080422	240-171144-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 20, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_56	8/4/22	~		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1175_080422	8/4/22	1210		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171144 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12089 Baxter Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/4/22 1300	Novi Cold Storage	Arcadis	8/4/22 1300
Christian Garrido	Arcadis	8/5/22 1000	J Heal	EEGT	8/5/22 1001
J. Heal	EEGT	8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Client Sample ID: TRIP BLANK_56

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171144-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 14:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 14:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 14:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 14:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 14:39*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/10/22 14:39*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/10/22 14:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171144-1

Client Sample ID: MW-117S_080422
Date Collected: 08/04/22 12:10
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171144-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/10/22 16:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 18:59*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 18:59*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 18:59*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/10/22 18:59*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171516-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:02:21 AM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171516-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171516-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method 8260D: No MS/MSD in batch 538924 due to an incorrect dilution. TRIP BLANK_27 (240-171516-1) and MW-151S_081022 (240-171516-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171516-1	TRIP BLANK_27	Water	08/10/22 00:00	08/13/22 09:45
240-171516-2	MW-151S_081022	Water	08/10/22 13:50	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Client Sample ID: TRIP BLANK_27 — Lab Sample ID: 240-171516-1

No Detections.

Client Sample ID: MW-151S_081022 — Lab Sample ID: 240-171516-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.90	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Client Sample ID: TRIP BLANK_27

Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171516-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 19:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 19:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 19:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*08/15/22 19:42*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*08/15/22 19:42*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/15/22 19:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 19:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Client Sample ID: MW-151S_081022
Date Collected: 08/10/22 13:50
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171516-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 01:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/21/22 01:25*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 20:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 20:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 20:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 20:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 20:04	1
Vinyl chloride	**0.90**	**J**	1.0	0.45	ug/L			08/15/22 20:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/15/22 20:04*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 20:04*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/15/22 20:04*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 20:04*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171516-1	TRIP BLANK_27	113	107	100	103
240-171516-2	MW-151S_081022	112	105	99	103
LCS 240-538924/5	Lab Control Sample	108	107	105	105
MB 240-538924/8	Method Blank	109	104	102	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171516-2	MW-151S_081022	71
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538924/8
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/15/22 15:38*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 15:38*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 15:38*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 15:38*	*1*

Lab Sample ID: LCS 240-538924/5
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.1		ug/L		106	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	20.0		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.4		ug/L		104	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

GC/MS VOA

Analysis Batch: 538924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171516-1	TRIP BLANK_27	Total/NA	Water	8260D	
240-171516-2	MW-151S_081022	Total/NA	Water	8260D	
MB 240-538924/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538924/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171516-2	MW-151S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Client Sample ID: TRIP BLANK_27

Lab Sample ID: 240-171516-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 19:42

Client Sample ID: MW-151S_081022

Lab Sample ID: 240-171516-2

Date Collected: 08/10/22 13:50

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 20:04
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/21/22 01:25

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sara Sutaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_27	8/10/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-15/S_081022	08/10/22	1350		6						6					N	G	X	X	X	X	X	X	+	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171516 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 1209 Brewster Back yard
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sara Sutaria	Arcadis	08/10/22/1447	Arcadis Cold Stor.	Arcadis	08/10/22/1447
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/12/22 955	Jeri Hall	EETM	8/12/22 956
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETM	8/12/22 958		EETNC	8-13-22 0545

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171516
Barberton Facility

Client Arcadis Site Name Livonia
Cooler Received on 8-13-22 Opened on 8-13-22
Cooler unpacked by: (me)
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	(Yes)	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.	(me)	8-13-22
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420/6	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171516-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171516-1

		Sample Name:	TRIP BLANK_27				MW-151S_081022			
		Lab Sample ID:	2401715161				2401715162			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.90	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

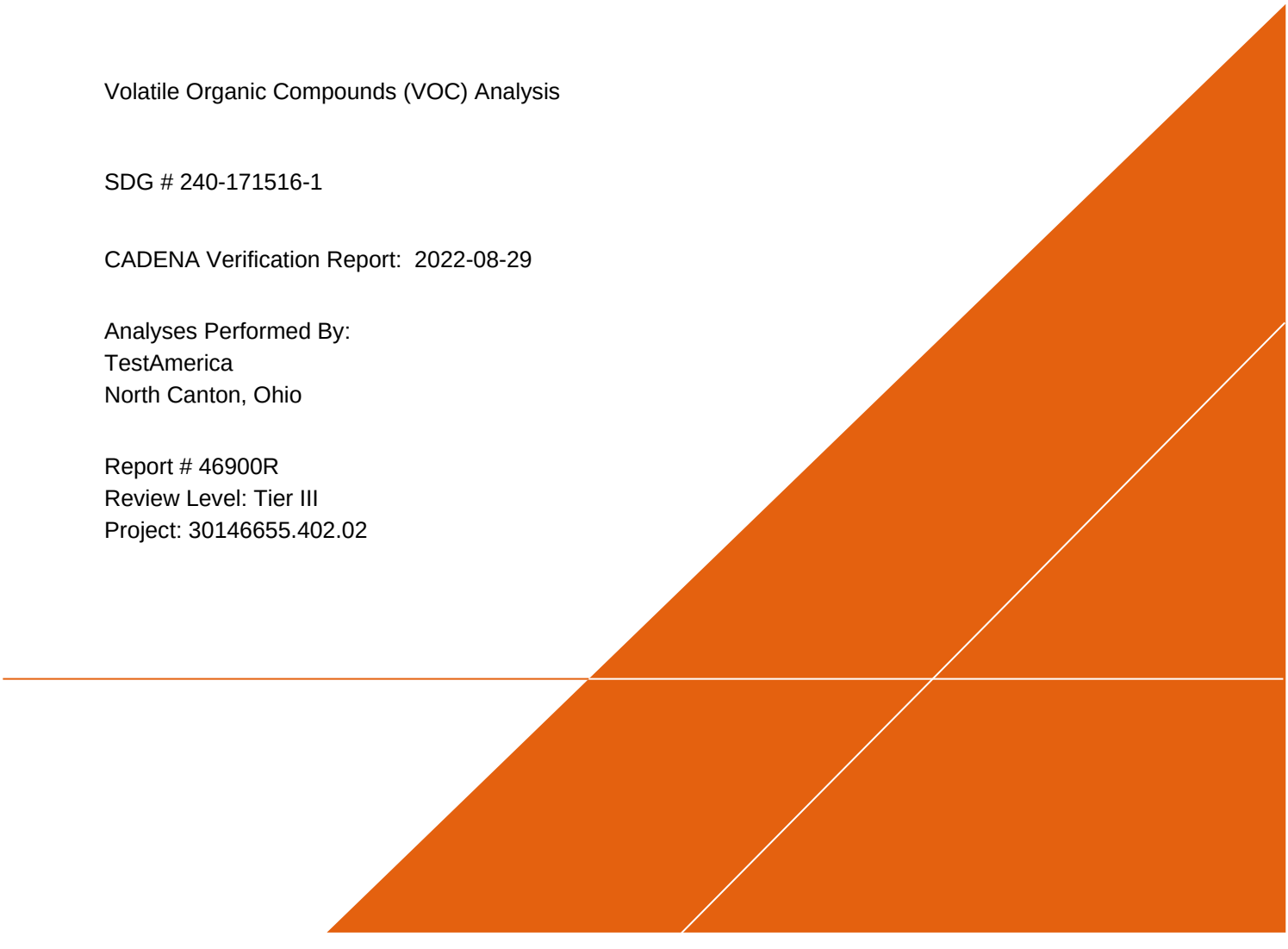
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171516-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46900R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171516-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_27	240-171516-1	Water	08/10/22		X	
MW-151S_081022	240-171516-2	Water	08/10/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 26, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sara Sutaria	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_27	8/10/22	—		2						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-15-S-081022	08/10/22	1350		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171516 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1209 Brewster Back yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sara Sutaria	Arcadis	08/10/22/1447	Arcadis Cold Stor.	Arcadis	08/10/22/1447
Stephanie Hall	Arcadis	8/12/22 955	Jeri Hall	EETM	8/12/22 956
Jeri Hall	EETM	8/12/22 958	Received in Laboratory by:	EETNC	8-13-22 0545

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8/29/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Client Sample ID: TRIP BLANK_27

Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171516-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 19:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 19:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 19:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*08/15/22 19:42*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*08/15/22 19:42*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/15/22 19:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 19:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171516-1

Client Sample ID: MW-151S_081022
Date Collected: 08/10/22 13:50
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171516-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 01:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/21/22 01:25*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 20:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 20:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 20:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 20:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 20:04	1
Vinyl chloride	**0.90**	**J**	1.0	0.45	ug/L			08/15/22 20:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/15/22 20:04*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 20:04*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/15/22 20:04*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 20:04*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171580-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:25:16 AM
Nicole Kalis, Project Manager I
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Designee for

Michael DelMonico, Project Manager I
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LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Job ID: 240-171580-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171580-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-539260 was outside the method criteria for the following analyte(s): Tetrachloroethene. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated. TRIP BLANK_12 (240-171580-1), MW-156S_081022 (240-171580-2) and (CCVIS 240-539260/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171580-1	TRIP BLANK_12	Water	08/10/22 00:00	08/16/22 09:00
240-171580-2	MW-156S_081022	Water	08/10/22 12:46	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Client Sample ID: TRIP BLANK_12 — Lab Sample ID: 240-171580-1

No Detections.

Client Sample ID: MW-156S_081022 — Lab Sample ID: 240-171580-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Client Sample ID: TRIP BLANK_12

Date Collected: 08/10/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171580-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 16:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 16:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 16:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 16:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 16:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 16:50*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 16:50*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/17/22 16:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Client Sample ID: MW-156S_081022
Date Collected: 08/10/22 12:46
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171580-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 21:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/20/22 21:28*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 17:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 17:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 17:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 17:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/17/22 17:14*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/17/22 17:14*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*08/17/22 17:14*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/17/22 17:14*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171570-A-3 MS	Matrix Spike	107	104	101	110
240-171570-A-3 MSD	Matrix Spike Duplicate	100	90	95	103
240-171580-1	TRIP BLANK_12	99	90	91	107
240-171580-2	MW-156S_081022	94	85	88	102
LCS 240-539260/5	Lab Control Sample	92	91	90	100
MB 240-539260/8	Method Blank	97	90	91	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171580-2	MW-156S_081022	70
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539260/8
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 15:40*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 15:40*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 15:40*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 15:40*	*1*

Lab Sample ID: LCS 240-539260/5
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	77 - 123
Tetrachloroethene	20.0	23.0		ug/L		115	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	22.5		ug/L		113	70 - 122
Vinyl chloride	20.0	18.8		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	500	U	10000	10300		ug/L		103	56 - 135
cis-1,2-Dichloroethene	500	U	10000	10200		ug/L		102	66 - 128
Tetrachloroethene	500	U	10000	10400		ug/L		104	62 - 131
trans-1,2-Dichloroethene	500	U	10000	9700		ug/L		97	56 - 136
Trichloroethene	500	U	10000	10200		ug/L		102	61 - 124
Vinyl chloride	500	U	10000	10300		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MSD
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	500	U	10000	10900		ug/L		109	56 - 135	6	26
cis-1,2-Dichloroethene	500	U	10000	11300		ug/L		113	66 - 128	10	14
Tetrachloroethene	500	U	10000	11200		ug/L		112	62 - 131	7	20
trans-1,2-Dichloroethene	500	U	10000	10400		ug/L		104	56 - 136	7	15
Trichloroethene	500	U	10000	10600		ug/L		106	61 - 124	4	15
Vinyl chloride	500	U	10000	10700		ug/L		107	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

GC/MS VOA

Analysis Batch: 539260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171580-1	TRIP BLANK_12	Total/NA	Water	8260D	
240-171580-2	MW-156S_081022	Total/NA	Water	8260D	
MB 240-539260/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539260/5	Lab Control Sample	Total/NA	Water	8260D	
240-171570-A-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171570-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171580-2	MW-156S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Client Sample ID: TRIP BLANK_12

Lab Sample ID: 240-171580-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 16:50

Client Sample ID: MW-156S_081022

Lab Sample ID: 240-171580-2

Date Collected: 08/10/22 12:46

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 17:14
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 21:28

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_12	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1565-081022	08/10/22	1246		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171580 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12100 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/12/22 1302	Novi Cold Storage	Arcadis	8/12/22 1302
[signature]	Arcadis	8/15/22 1005	[signature]	EETA	8/15/2022 1005
[signature]	EETA	8/16/22 0100	[signature]	EETNC	8-16-22 0900

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171580
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by: DMC

Cooler Received on 5-16-22 Opened on 5-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171580

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171580-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171580-1

		Sample Name:	TRIP BLANK_12				MW-156S_081022			
		Lab Sample ID:	2401715801				2401715802			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

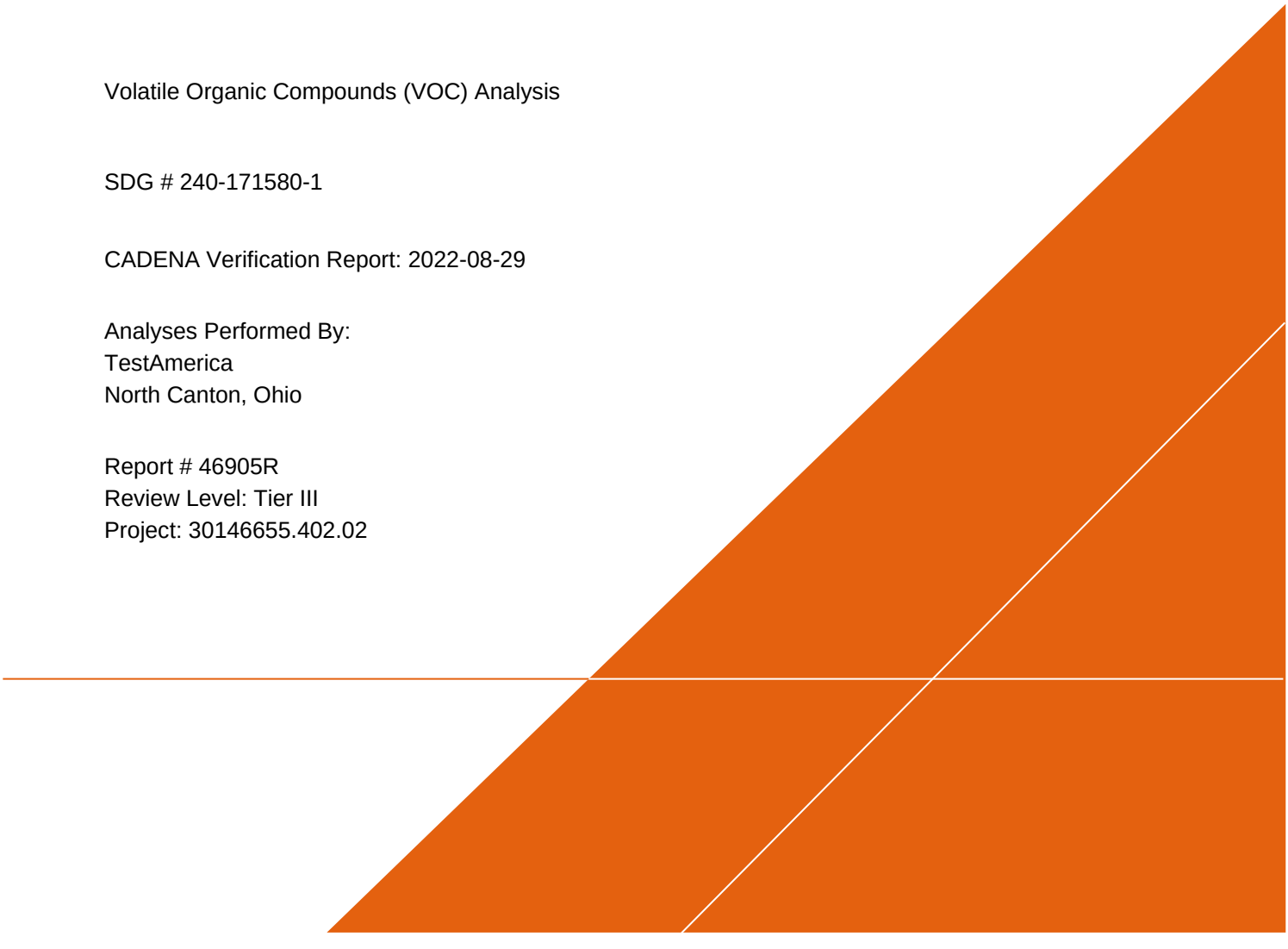
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171580-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46905R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171580-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_12	240-171580-1	Water	08/10/22		X	
MW-156S_081022	240-171580-2	Water	08/10/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_12 MW-156S_081022	Continuous Calibration Verification %D	Tetrachloroethene	22.6%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 26, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 10 day ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_12	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1565-081022	08/10/22	1246		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171580 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12100 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/12/22 1302	Novi Cold Storage	Arcadis	8/12/22 1302
[signature]	Arcadis	8/15/22 1005	[signature]	EETA	8/15/2022 1005
[signature]	EETA	8/16/22 0100	Received in Laboratory by: [signature]	EETNC	8-16-22 0900

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Client Sample ID: TRIP BLANK_12

Date Collected: 08/10/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171580-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 16:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 16:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 16:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 16:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 16:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 16:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 16:50*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 16:50*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/17/22 16:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171580-1

Client Sample ID: MW-156S_081022
Date Collected: 08/10/22 12:46
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171580-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 21:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/20/22 21:28*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 17:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 17:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 17:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 17:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 17:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/17/22 17:14*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/17/22 17:14*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*08/17/22 17:14*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/17/22 17:14*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171858-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/31/2022 1:57:02 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Job ID: 240-171858-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171858-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171858-1	TRIP BLANK_29	Water	08/18/22 00:00	08/20/22 12:17
240-171858-2	MW-171S_081822	Water	08/18/22 11:45	08/20/22 12:17

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Client Sample ID: TRIP BLANK_29 — Lab Sample ID: 240-171858-1

No Detections.

Client Sample ID: MW-171S_081822 — Lab Sample ID: 240-171858-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Client Sample ID: TRIP BLANK_29
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 12:17

Lab Sample ID: 240-171858-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 18:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 18:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 18:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/23/22 18:43*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/23/22 18:43*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 18:43*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/23/22 18:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Client Sample ID: MW-171S_081822
Date Collected: 08/18/22 11:45
Date Received: 08/20/22 12:17

Lab Sample ID: 240-171858-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 02:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/26/22 02:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/23/22 19:06*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/23/22 19:06*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 19:06*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/23/22 19:06*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171856-B-3 MS	Matrix Spike	96	91	94	94
240-171856-C-3 MSD	Matrix Spike Duplicate	100	95	98	98
240-171858-1	TRIP BLANK_29	104	87	95	103
240-171858-2	MW-171S_081822	103	86	95	101
LCS 240-539824/5	Lab Control Sample	100	94	99	99
MB 240-539824/12	Method Blank	99	84	93	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171824-G-2 MS	Matrix Spike	90
240-171824-M-2 MSD	Matrix Spike Duplicate	90
240-171858-2	MW-171S_081822	85
LCS 240-540264/3	Lab Control Sample	90
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539824/12
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 14:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 14:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 14:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 14:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/23/22 14:26*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/23/22 14:26*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 14:26*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/23/22 14:26*	*1*

Lab Sample ID: LCS 240-539824/5
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.2		ug/L		91	63 - 134
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	77 - 123
Tetrachloroethene	20.0	20.4		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	17.1		ug/L		86	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.1		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171856-B-3 MS
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 136
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.1		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171856-B-3 MS
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-171856-C-3 MSD
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.3		ug/L		101	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	66 - 128	8	14
Tetrachloroethene	1.0	U	20.0	20.9		ug/L		104	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	20.0	19.0		ug/L		95	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	10	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540264/4
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-G-2 MS
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

GC/MS VOA

Analysis Batch: 539824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171858-1	TRIP BLANK_29	Total/NA	Water	8260D	
240-171858-2	MW-171S_081822	Total/NA	Water	8260D	
MB 240-539824/12	Method Blank	Total/NA	Water	8260D	
LCS 240-539824/5	Lab Control Sample	Total/NA	Water	8260D	
240-171856-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171856-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171858-2	MW-171S_081822	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171824-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Client Sample ID: TRIP BLANK_29

Lab Sample ID: 240-171858-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/20/22 12:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539824	AJS	EET CAN	08/23/22 18:43

Client Sample ID: MW-171S_081822

Lab Sample ID: 240-171858-2

Date Collected: 08/18/22 11:45

Matrix: Water

Date Received: 08/20/22 12:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539824	AJS	EET CAN	08/23/22 19:06
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 02:53

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171858-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
a	TRIP BLANK_ 2	8/18/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
b	MW-171s_081822	08/18/22	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171858 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1210 Brewster and Capitol Backyard

Submit all results through Cadena at jomalla@cadenaco.com. Cadena #E20363

Level IV Reporting requested.

	Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
1	Sam Sukaria	Arcadis	08/18/22/1400	Arcadis Cold storage	Arcadis	08/18/22/1400
2		ARCADIS	8/18/22/1000	Gina Rivera	ETA	8/18/22/1000
3				Received in Laboratory by:	EETNC	8-20-22 0935

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171858

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP

Cooler unpacked by: TME

Cooler Received on 8-20-22 Opened on 8-20-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171858-1
Sample date: 2022-08-18
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171858-1

		Sample Name:	TRIP BLANK_29				MW-171S_081822			
		Lab Sample ID:	2401718581				2401718582			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

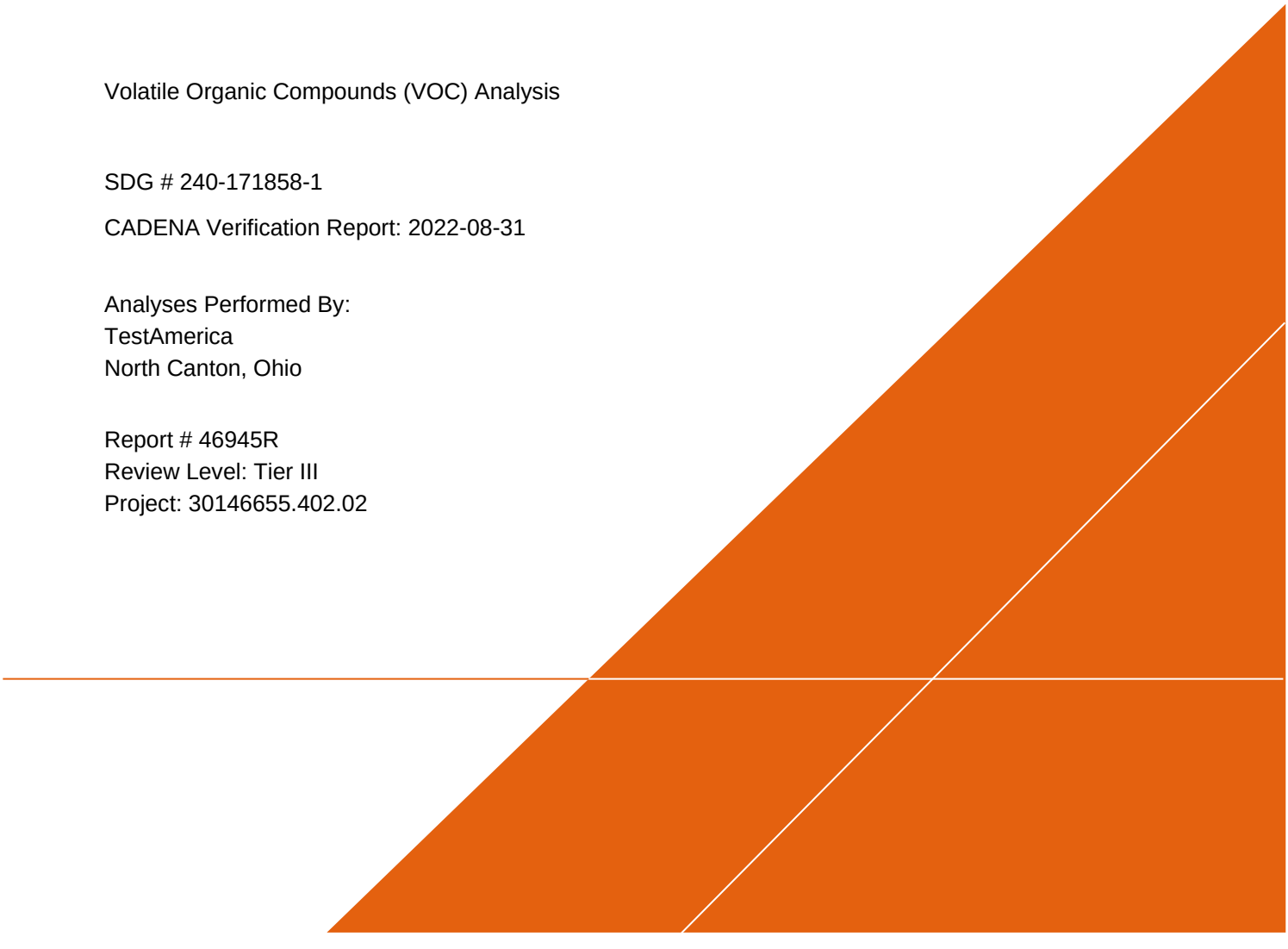
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171858-1

CADENA Verification Report: 2022-08-31

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46945R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171858-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_29	240-171858-1	Water	08/18/22		X	
MW-171S_081822	240-171858-2	Water	08/18/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
a	TRIP BLANK_ 29	8/18/22	—		1						1					N	G	X	X	X	X	X	X					1 Trip Blank
b	MW-171s_081822	08/18/22	1145		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171858 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For [ ] Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1210 Brewster and Capitol Backyard

Submit all results through Cadena at jomalia@cadenaco.com. Cadena #E20363

Level IV Reporting requested.

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by: Sam Sukaria	Arcadis	08/18/22/1400	Received by: Arcadis Cold storage	Arcadis	08/18/22/1400
Relinquished by:	Company: ARCADIS	Date/Time: 8/18/22 / 1000	Received by: Gina Rivera	Company: ETA	Date/Time: 8/18/22 / 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: EETNC	Date/Time: 5-20-22 0935

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08/31/2022

Client Sample ID: TRIP BLANK_29
Lab Sample ID: 240-171858-1
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 12:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 18:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 18:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 18:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/23/22 18:43*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/23/22 18:43*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 18:43*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/23/22 18:43*	*1*

Client Sample ID: MW-171S_081822
Lab Sample ID: 240-171858-2
Date Collected: 08/18/22 11:45
Matrix: Water
Date Received: 08/20/22 12:17

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 02:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/26/22 02:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/23/22 19:06*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/23/22 19:06*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 19:06*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/23/22 19:06*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171582-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:45:13 AM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Job ID: 240-171582-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171582-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-539260 was outside the method criteria for the following analyte(s): Tetrachloroethene. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated. TRIP BLANK_13 (240-171582-1), MW-118S_081022 (240-171582-2) and (CCVIS 240-539260/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171582-1	TRIP BLANK_13	Water	08/10/22 00:00	08/16/22 09:00
240-171582-2	MW-118S_081022	Water	08/10/22 14:36	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Client Sample ID: TRIP BLANK_13 — Lab Sample ID: 240-171582-1

No Detections.

Client Sample ID: MW-118S_081022 — Lab Sample ID: 240-171582-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Client Sample ID: TRIP BLANK_13
Date Collected: 08/10/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171582-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 18:24*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/17/22 18:24*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/17/22 18:24*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/17/22 18:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Client Sample ID: MW-118S_081022
Date Collected: 08/10/22 14:36
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171582-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/20/22 22:15*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/17/22 18:47*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 18:47*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 18:47*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/17/22 18:47*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171570-A-3 MS	Matrix Spike	107	104	101	110
240-171570-A-3 MSD	Matrix Spike Duplicate	100	90	95	103
240-171582-1	TRIP BLANK_13	97	87	90	106
240-171582-2	MW-118S_081022	98	90	91	105
LCS 240-539260/5	Lab Control Sample	92	91	90	100
MB 240-539260/8	Method Blank	97	90	91	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171582-2	MW-118S_081022	75
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539260/8
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 15:40*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 15:40*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 15:40*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 15:40*	*1*

Lab Sample ID: LCS 240-539260/5
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	77 - 123
Tetrachloroethene	20.0	23.0		ug/L		115	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	22.5		ug/L		113	70 - 122
Vinyl chloride	20.0	18.8		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	500	U	10000	10300		ug/L		103	56 - 135
cis-1,2-Dichloroethene	500	U	10000	10200		ug/L		102	66 - 128
Tetrachloroethene	500	U	10000	10400		ug/L		104	62 - 131
trans-1,2-Dichloroethene	500	U	10000	9700		ug/L		97	56 - 136
Trichloroethene	500	U	10000	10200		ug/L		102	61 - 124
Vinyl chloride	500	U	10000	10300		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MSD
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	500	U	10000	10900		ug/L		109	56 - 135	6	26
cis-1,2-Dichloroethene	500	U	10000	11300		ug/L		113	66 - 128	10	14
Tetrachloroethene	500	U	10000	11200		ug/L		112	62 - 131	7	20
trans-1,2-Dichloroethene	500	U	10000	10400		ug/L		104	56 - 136	7	15
Trichloroethene	500	U	10000	10600		ug/L		106	61 - 124	4	15
Vinyl chloride	500	U	10000	10700		ug/L		107	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.4		ug/L		104	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

GC/MS VOA

Analysis Batch: 539260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171582-1	TRIP BLANK_13	Total/NA	Water	8260D	
240-171582-2	MW-118S_081022	Total/NA	Water	8260D	
MB 240-539260/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539260/5	Lab Control Sample	Total/NA	Water	8260D	
240-171570-A-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171570-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171582-2	MW-118S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Client Sample ID: TRIP BLANK_13

Lab Sample ID: 240-171582-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 18:24

Client Sample ID: MW-118S_081022

Lab Sample ID: 240-171582-2

Date Collected: 08/10/22 14:36

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 18:47
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 22:15

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171582-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_13	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1185-081022	8/10/22	1436		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12124 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/12/22 1300	Novi Cold Storage	Arcadis	08/12/22 1300
[signature]	Arcadis	8/15/22 1005	[signature]	EETA	8/15/22 10:00
[signature]	EETA	8/15/22 10:00	Received in Laboratory by: [signature]	EETNC	8-16-22 0900

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171582
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by: DMC

Cooler Received on 8-16-22 Opened on 8-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y)N), # of containers (Y)N), and sample type of grab/comp(Y)N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171582

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171582-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171582-1

		Sample Name:	TRIP BLANK_13				MW-118S_081022			
		Lab Sample ID:	2401715821				2401715822			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

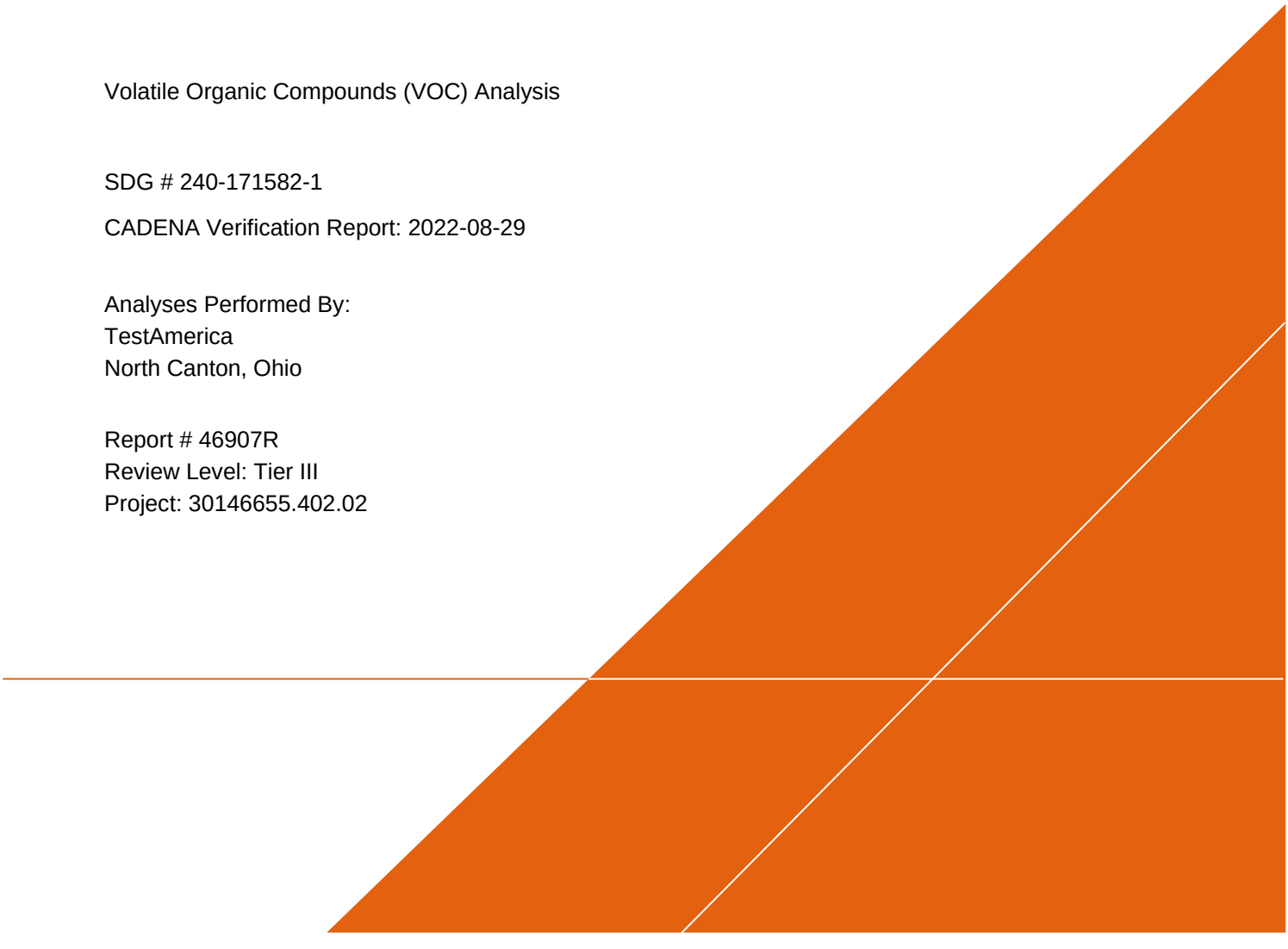
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171582-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46907R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171582-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_13	240-171582-1	Water	08/10/22		X	
MW-118S_081022	240-171582-2	Water	08/10/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_13 MW-118S_081022	Continuous Calibration Verification %D	Tetrachloroethene	+22.6%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_13	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1185-081022	08/10/22	1436		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171582 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12124 Boston Rst

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/12/22 1300	Novi Cold Storage	Arcadis	08/12/22 1300
[signature]	Arcadis	8/15/22 1005	[signature]	EETA	8/15/22 10:00
[signature]	EETA	8/15/22 10:02	[signature]	EETNC	8-16-22 0900

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Client Sample ID: TRIP BLANK_13
Lab Sample ID: 240-171582-1
Date Collected: 08/10/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 18:24*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/17/22 18:24*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/17/22 18:24*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/17/22 18:24*	*1*

Client Sample ID: MW-118S_081022
Lab Sample ID: 240-171582-2
Date Collected: 08/10/22 14:36
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/20/22 22:15*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/17/22 18:47*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 18:47*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 18:47*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/17/22 18:47*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171818-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 8:49:35 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Job ID: 240-171818-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171818-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171818-1	TRIP BLANK_101	Water	08/17/22 00:00	08/19/22 09:50
240-171818-2	MW-207S_081722	Water	08/17/22 14:50	08/19/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Client Sample ID: TRIP BLANK_101 — Lab Sample ID: 240-171818-1

No Detections.

Client Sample ID: MW-207S_081722 — Lab Sample ID: 240-171818-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Client Sample ID: TRIP BLANK_101
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171818-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 15:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 15:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 15:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 15:49*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/22/22 15:49*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 15:49*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 15:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Client Sample ID: MW-207S_081722
Date Collected: 08/17/22 14:50
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171818-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/24/22 23:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 16:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 16:14*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 16:14*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 16:14*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171818-1	TRIP BLANK_101	88	92	93	86
240-171818-2	MW-207S_081722	88	94	93	87
240-171821-E-4 MSD	Matrix Spike Duplicate	85	93	95	86
240-171821-H-4 MS	Matrix Spike	88	91	96	88
LCS 240-539643/5	Lab Control Sample	86	92	97	86
MB 240-539643/8	Method Blank	89	95	95	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171818-2	MW-207S_081722	88
240-171821-I-4 MS	Matrix Spike	86
240-171821-M-4 MSD	Matrix Spike Duplicate	88
LCS 240-540081/3	Lab Control Sample	91
MB 240-540081/4	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539643/8
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 12:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 12:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 12:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 12:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 12:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 12:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 12:29*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 12:29*	*1*

Lab Sample ID: LCS 240-539643/5
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.0		ug/L		85	77 - 123
Tetrachloroethene	20.0	19.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	17.5		ug/L		88	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	18.3		ug/L		91	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-H-4 MS
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.8		ug/L		84	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*08/24/22 18:05*	*1*

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171821-I-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-M-4 MSD
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

GC/MS VOA

Analysis Batch: 539643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171818-1	TRIP BLANK_101	Total/NA	Water	8260D	
240-171818-2	MW-207S_081722	Total/NA	Water	8260D	
MB 240-539643/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539643/5	Lab Control Sample	Total/NA	Water	8260D	
240-171821-E-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171821-H-4 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171818-2	MW-207S_081722	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171821-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Client Sample ID: TRIP BLANK_101

Lab Sample ID: 240-171818-1

Date Collected: 08/17/22 00:00

Matrix: Water

Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 15:49

Client Sample ID: MW-207S_081722

Lab Sample ID: 240-171818-2

Date Collected: 08/17/22 14:50

Matrix: Water

Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 16:14
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/24/22 23:59

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171818-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Sampler Name: Lottie Jay			Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_101	8/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-207S-081722	8/17/22	1450		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171818 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12125 Stark Rd.

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/17/22 1600	NOVI COLD STORAGE	ARCADIS	8/17/22 1600
[illegible]	Arcadis	8/18/22 950	Gina Rivera	ETA	8-18-22 9:50
Gina Rivera	ETA	8-18-22 1700	Received in Laboratory by: [illegible]	ETA	8/19/22 9:50

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 171818
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8/19-22 Opened on 8-19-22

Cooler unpacked by: Charlek

FedEx: 1st Grd (Ex) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.8 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

DATA VERIFICATION REPORT

September 02, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171818-1
Sample date: 2022-08-17
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-02
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171818-1

		Sample Name:	TRIP BLANK_101				MW-207S_081722			
		Lab Sample ID:	2401718181				2401718182			
		Sample Date:	8/17/2022				8/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

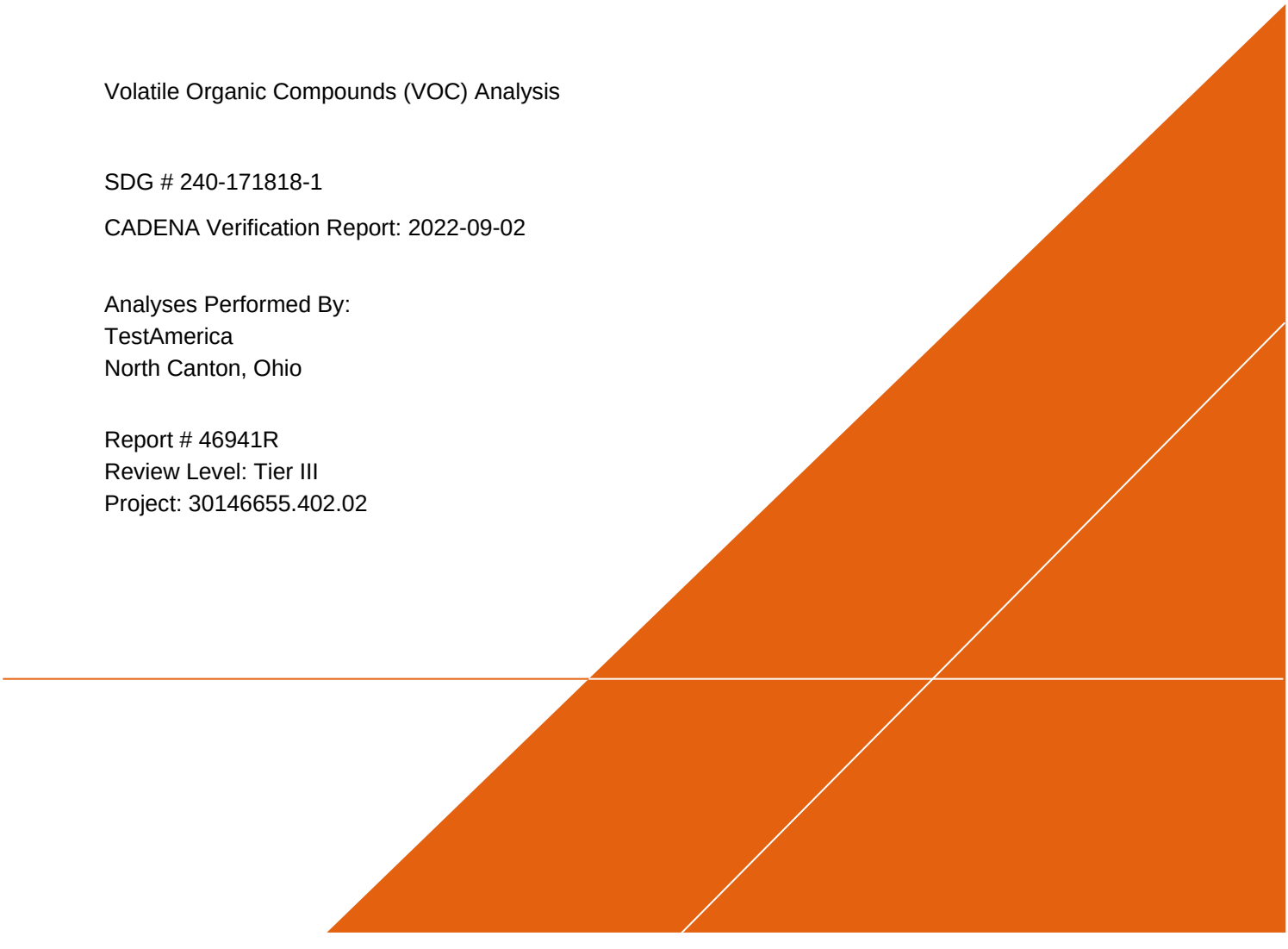
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171818-1

CADENA Verification Report: 2022-09-02

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46941R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171818-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_101	240-171818-1	Water	08/17/22		X	
MW-207S_081722	240-171818-2	Water	08/17/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks (✓), 1 week, 2 days, 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_101	8/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-207S-081722	8/17/22	1450		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171818 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12125 Stark Rd.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/17/22 1600	NOVI COLD STORAGE	ARCADIS	8/17/22 1600
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/18/22 950	Gina Rivera	ETA	8-18-22 9:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Gina Rivera	ETA	8-18-22 1700	[illegible]	ETA	8/19/22 9:50

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09/02/2022

Client Sample ID: TRIP BLANK_101
Lab Sample ID: 240-171818-1

Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 15:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 15:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 15:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 15:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 15:49*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/22/22 15:49*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 15:49*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 15:49*	*1*

Client Sample ID: MW-207S_081722
Lab Sample ID: 240-171818-2

Date Collected: 08/17/22 14:50
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/24/22 23:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 16:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 16:14*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 16:14*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 16:14*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170886-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:32:38 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Job ID: 240-170886-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170886-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170886-1	TRIP BLANK_31	Water	08/01/22 00:00	08/03/22 09:45
240-170886-2	MW-95S_080122	Water	08/01/22 11:20	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Client Sample ID: TRIP BLANK_31 — Lab Sample ID: 240-170886-1

No Detections.

Client Sample ID: MW-95S_080122 — Lab Sample ID: 240-170886-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Client Sample ID: TRIP BLANK_31
Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170886-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/05/22 13:59*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/05/22 13:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/05/22 13:59*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/05/22 13:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Client Sample ID: MW-95S_080122

Date Collected: 08/01/22 11:20
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170886-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 18:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 16:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 16:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 16:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/05/22 16:04*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 16:04*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 16:04*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/05/22 16:04*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170886-1	TRIP BLANK_31	96	89	94	98
240-170886-2	MW-95S_080122	100	88	98	103
240-170891-A-2 MS	Matrix Spike	94	98	98	100
240-170891-C-2 MSD	Matrix Spike Duplicate	94	102	99	99
LCS 240-537713/4	Lab Control Sample	93	96	99	100
MB 240-537713/7	Method Blank	97	88	96	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170886-2	MW-95S_080122	82
240-170886-2 MS	MW-95S_080122	80
240-170886-2 MSD	MW-95S_080122	83
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537713/7
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:09*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 13:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 13:09*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:09*	*1*

Lab Sample ID: LCS 240-537713/4
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.4		ug/L		113	63 - 134
cis-1,2-Dichloroethene	25.0	25.6		ug/L		102	77 - 123
Tetrachloroethene	25.0	27.3		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122
Vinyl chloride	12.5	9.78		ug/L		78	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	17.3		ug/L		69	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	18.0		ug/L		72	66 - 128
Tetrachloroethene	1.0	U F1	25.0	12.8	F1	ug/L		51	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	16.9		ug/L		68	56 - 136
Trichloroethene	1.0	U F1	25.0	14.4	F1	ug/L		57	61 - 124
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-C-2 MSD
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	19.0		ug/L		76	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	25.0	18.5		ug/L		74	66 - 128	3	14
Tetrachloroethene	1.0	U F1	25.0	14.8	F1	ug/L		59	62 - 131	15	20
trans-1,2-Dichloroethene	1.0	U	25.0	17.9		ug/L		71	56 - 136	6	15
Trichloroethene	1.0	U F1	25.0	15.5		ug/L		62	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	15.5		ug/L		124	43 - 157	24	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: MW-95S_080122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: MW-95S_080122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

GC/MS VOA

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170886-2	MW-95S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-2 MS	MW-95S_080122	Total/NA	Water	8260D SIM	
240-170886-2 MSD	MW-95S_080122	Total/NA	Water	8260D SIM	

Analysis Batch: 537713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170886-1	TRIP BLANK_31	Total/NA	Water	8260D	
240-170886-2	MW-95S_080122	Total/NA	Water	8260D	
MB 240-537713/7	Method Blank	Total/NA	Water	8260D	
LCS 240-537713/4	Lab Control Sample	Total/NA	Water	8260D	
240-170891-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-170891-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Client Sample ID: TRIP BLANK_31

Lab Sample ID: 240-170886-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 13:59	SAM	EETNC CAN

Client Sample ID: MW-95S_080122

Lab Sample ID: 240-170886-2

Date Collected: 08/01/22 11:20

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 16:04	SAM	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 18:43	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170886-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_31				X						X					N	G	X	X	X	X	X	X						1 Trip Blank
MW-455_080122	8/1/22	1120		X						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170886 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12131 Burton Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
Christian Garrido	ARCADIS	8/2/22 / 947	Jeri Hall	EEA	8/2/22 / 948
Jeri Hall	EEA	8/2/22 950	Christian Valencia	EEA	8/3/22 955

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170885

Eurofins - Canton Sample Receipt Form/Narrative Login # : ~~170885~~
Barberton Facility

Client Acadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 810/2016	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

CK 8-3-22 8-3-22

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 09, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170886-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-09
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170886-1

		Sample Name:	TRIP BLANK_31				MW-95S_080122			
		Lab Sample ID:	2401708861				2401708862			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

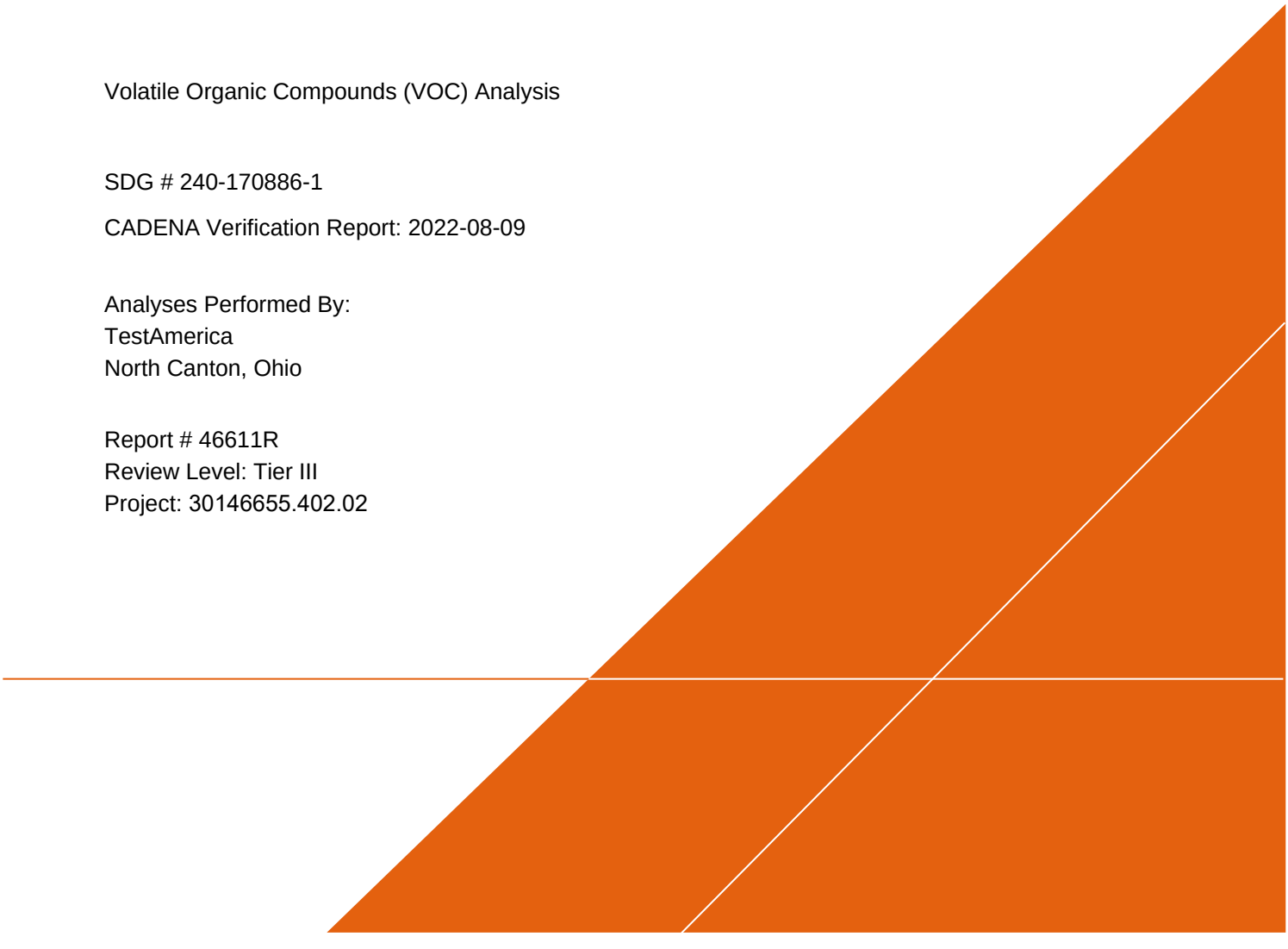
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170886-1

CADENA Verification Report: 2022-08-09

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46611R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170886-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_31	240-170886-1	Water	08/01/22		X	
MW-95S_080122	240-170886-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 12, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

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THE LEADER IN ENVIRONMENTAL TESTING

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christian Garrido	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_31				X						X					N	G	X	X	X	X	X	X		1 Trip Blank
MW-455_050122	8/1/22	1120		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170886 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12131 Beaton Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 / 947	Jeri Hall	EEnt	8/2/22 / 948
Relinquished by: Jeri Hall	Company: EEnt	Date/Time: 8/2/22 950	Received in Laboratory by:	Company:	Date/Time: 8/3/22 9 48

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08/09/2022

Client Sample ID: TRIP BLANK_31
Lab Sample ID: 240-170886-1
Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/05/22 13:59*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/05/22 13:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/05/22 13:59*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/05/22 13:59*	*1*

Client Sample ID: MW-95S_080122
Lab Sample ID: 240-170886-2
Date Collected: 08/01/22 11:20
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 18:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 16:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 16:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 16:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/05/22 16:04*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 16:04*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 16:04*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/05/22 16:04*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170860-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:29:56 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Job ID: 240-170860-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170860-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) for analytical batch 537536 exceeded control criteria for Vinyl Chloride. The samples associated with this CCV were non-detect for the affected analyte. In accordance with the laboratory SOP, a low level CCV at the reporting limit (labeled as an MRL) was analyzed and the affected compound was detected; therefore the data has been reported. No further corrective action was required: TRIP BLANK_33 (240-170860-1) and MW-160S_080122 (240-170860-2).

Method 8260D: NO MS/MSD in batch 537536 due to an instrument fault: TRIP BLANK_33 (240-170860-1) and MW-160S_080122 (240-170860-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170860-1	TRIP BLANK_33	Water	08/01/22 00:00	08/03/22 09:45
240-170860-2	MW-160S_080122	Water	08/01/22 10:00	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Client Sample ID: TRIP BLANK_33 — Lab Sample ID: 240-170860-1

No Detections.

Client Sample ID: MW-160S_080122 — Lab Sample ID: 240-170860-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Client Sample ID: TRIP BLANK_33

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170860-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 14:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 14:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 14:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/04/22 14:59*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 14:59*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 14:59*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/04/22 14:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Client Sample ID: MW-160S_080122

Date Collected: 08/01/22 10:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170860-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/05/22 15:56*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 15:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 15:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 15:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 15:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 15:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/04/22 15:26*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 15:26*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/04/22 15:26*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/04/22 15:26*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170860-1	TRIP BLANK_33	102	104	108	108
240-170860-2	MW-160S_080122	104	104	110	111
LCS 240-537536/5	Lab Control Sample	92	115	115	101
MB 240-537536/8	Method Blank	104	104	108	107

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170860-2	MW-160S_080122	80
240-170886-F-2 MS	Matrix Spike	80
240-170886-F-2 MSD	Matrix Spike Duplicate	83
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537536/8
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 14:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 14:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 14:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 14:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/04/22 14:31*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 14:31*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 14:31*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/04/22 14:31*	*1*

Lab Sample ID: LCS 240-537536/5
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.7		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	22.1		ug/L		110	76 - 123
trans-1,2-Dichloroethene	20.0	19.9		ug/L		100	75 - 124
Trichloroethene	20.0	20.1		ug/L		101	70 - 122
Vinyl chloride	20.0	14.7		ug/L		74	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

GC/MS VOA

Analysis Batch: 537536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170860-1	TRIP BLANK_33	Total/NA	Water	8260D	
240-170860-2	MW-160S_080122	Total/NA	Water	8260D	
MB 240-537536/8	Method Blank	Total/NA	Water	8260D	
LCS 240-537536/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170860-2	MW-160S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-170886-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Client Sample ID: TRIP BLANK_33

Lab Sample ID: 240-170860-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 14:59	LEE	EETNC CAN

Client Sample ID: MW-160S_080122

Lab Sample ID: 240-170860-2

Date Collected: 08/01/22 10:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 15:26	LEE	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 15:56	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170860-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

CHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Gurrie	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_33				X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1005_080122	8/1/22	1000		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170860 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard Flammable Skin Irritant Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12141 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Gurrie	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 947	Jeri Hall	EETA	8/2/22 948
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/2/22 950	Charlie Kinsey	EETA	8/3/22 9:45

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8/9/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 170860
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 810420/6	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

CK 8-3-22 GME 8-3-22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 09, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170860-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-09
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers and MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170860-1

		Sample Name:	TRIP BLANK_33				MW-160S_080122			
		Lab Sample ID:	2401708601				2401708602			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

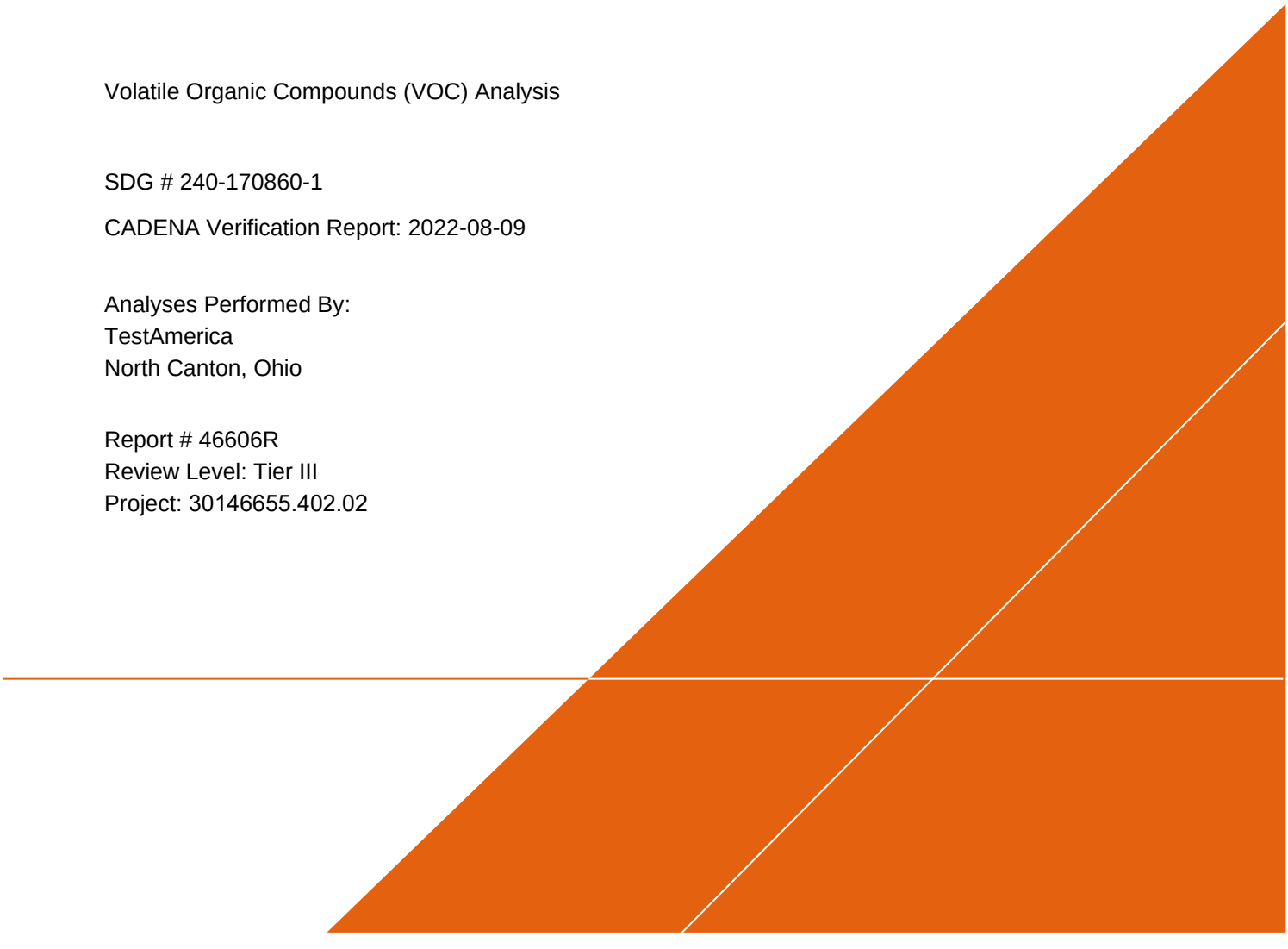
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170860-1

CADENA Verification Report: 2022-08-09

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46606R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170860-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_33	240-170860-1	Water	08/01/22		X	
MW-160S_080122	240-170860-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_33 MW-160S_080122	Continuous Calibration Verification %D	Vinyl chloride	-24.2%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 12, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_33				X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1005_080122	8/1/22	1000		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170860 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12141 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22/ 947	Jeri Hoe	EEA	8/2/22/ 948
Relinquished by: Jeri Hoe	Company: EEA	Date/Time: 8/2/22 950	Received in Laboratory by:	Company:	Date/Time: 8/3/22 9:45

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Client Sample ID: TRIP BLANK_33
Lab Sample ID: 240-170860-1
Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 14:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 14:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 14:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:59	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/04/22 14:59*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 14:59*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 14:59*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/04/22 14:59*	*1*

Client Sample ID: MW-160S_080122
Lab Sample ID: 240-170860-2
Date Collected: 08/01/22 10:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/05/22 15:56*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 15:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 15:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 15:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 15:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 15:26	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/04/22 15:26*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 15:26*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/04/22 15:26*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/04/22 15:26*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171733-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:20:20 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171733-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171733-1

Comments
No additional comments.

Receipt
The samples were received on 8/18/2022 2:08 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6º C and 4.3º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-539547 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_132 (240-171733-1), MW-166S_081622 (240-171733-2), (CCV 240-539547/4), (CCVIS 240-539547/3), (LCS 240-539547/5), (LCS 240-539547/6), (MB 240-539547/8), (240-171736-B-2), (240-171736-C-2 MS) and (240-171736-F-2 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171733-1	TRIP BLANK_132	Water	08/16/22 00:00	08/18/22 14:08
240-171733-2	MW-166S_081622	Water	08/16/22 14:20	08/18/22 14:08

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Client Sample ID: TRIP BLANK_132 — Lab Sample ID: 240-171733-1

No Detections.

Client Sample ID: MW-166S_081622 — Lab Sample ID: 240-171733-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Client Sample ID: TRIP BLANK_132
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171733-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/19/22 15:53*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:53*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/19/22 15:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Client Sample ID: MW-166S_081622
Date Collected: 08/16/22 14:20
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171733-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 21:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/24/22 21:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/19/22 19:03*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*08/19/22 19:03*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 19:03*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/19/22 19:03*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171733-1	TRIP BLANK_132	96	97	106	104
240-171733-2	MW-166S_081622	103	100	105	108
240-171736-C-2 MS	Matrix Spike	97	103	105	104
240-171736-F-2 MSD	Matrix Spike Duplicate	96	103	107	103
LCS 240-539547/5	Lab Control Sample	91	102	109	102
MB 240-539547/8	Method Blank	96	98	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171733-2	MW-166S_081622	88
240-171821-I-4 MS	Matrix Spike	86
240-171821-M-4 MSD	Matrix Spike Duplicate	88
LCS 240-540081/3	Lab Control Sample	91
MB 240-540081/4	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539547/8
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 15:05*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/19/22 15:05*	*1*

Lab Sample ID: LCS 240-539547/5
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	29.2		ug/L		117	76 - 123
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	21.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	19.9		ug/L		79	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.2		ug/L		81	56 - 136
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-171736-F-2 MSD
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	25.7		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.0		ug/L		88	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*08/24/22 18:05*	*1*

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171821-I-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-M-4 MSD
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

GC/MS VOA

Analysis Batch: 539547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171733-1	TRIP BLANK_132	Total/NA	Water	8260D	
240-171733-2	MW-166S_081622	Total/NA	Water	8260D	
MB 240-539547/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539547/5	Lab Control Sample	Total/NA	Water	8260D	
240-171736-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171736-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171733-2	MW-166S_081622	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171821-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Client Sample ID: TRIP BLANK_132

Lab Sample ID: 240-171733-1

Date Collected: 08/16/22 00:00

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 15:53

Client Sample ID: MW-166S_081622

Lab Sample ID: 240-171733-2

Date Collected: 08/16/22 14:20

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 19:03
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/24/22 21:27

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171733-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: DW NPDES RCRA Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lattie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_132	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1665_081622	8/16/22	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171733 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12147 Stark,

Submit all results through Cadena at jtomalla@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Lattie Jay	ARCADIS	8/16/22 1515	Received by: NOVI COLD STORAGE	ARCADIS	8/16/22 1515
Relinquished by: [signature]	Arcadis	8/17/22 1005	Received by: [signature]	EET A	8/17/22 10:10
Relinquished by: [signature]	EET A	8/17/22 10:10	Received in Laboratory by: [signature]	EETNC	8-18-22 @1408 (One) 8-18-22

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171733 OMR 8-18-22
Barberton Facility

Client Arcadis Site Name Ford Livonia Cooler unpacked by: OMR

Cooler Received on 8-18-22 Opened on 8-18-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171733

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.6	2.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	4.3	4.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171733-1
Sample date: 2022-08-16
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-30
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171733-1

		Sample Name:	TRIP BLANK_132				MW-166S_081622			
		Lab Sample ID:	2401717331				2401717332			
		Sample Date:	8/16/2022				8/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

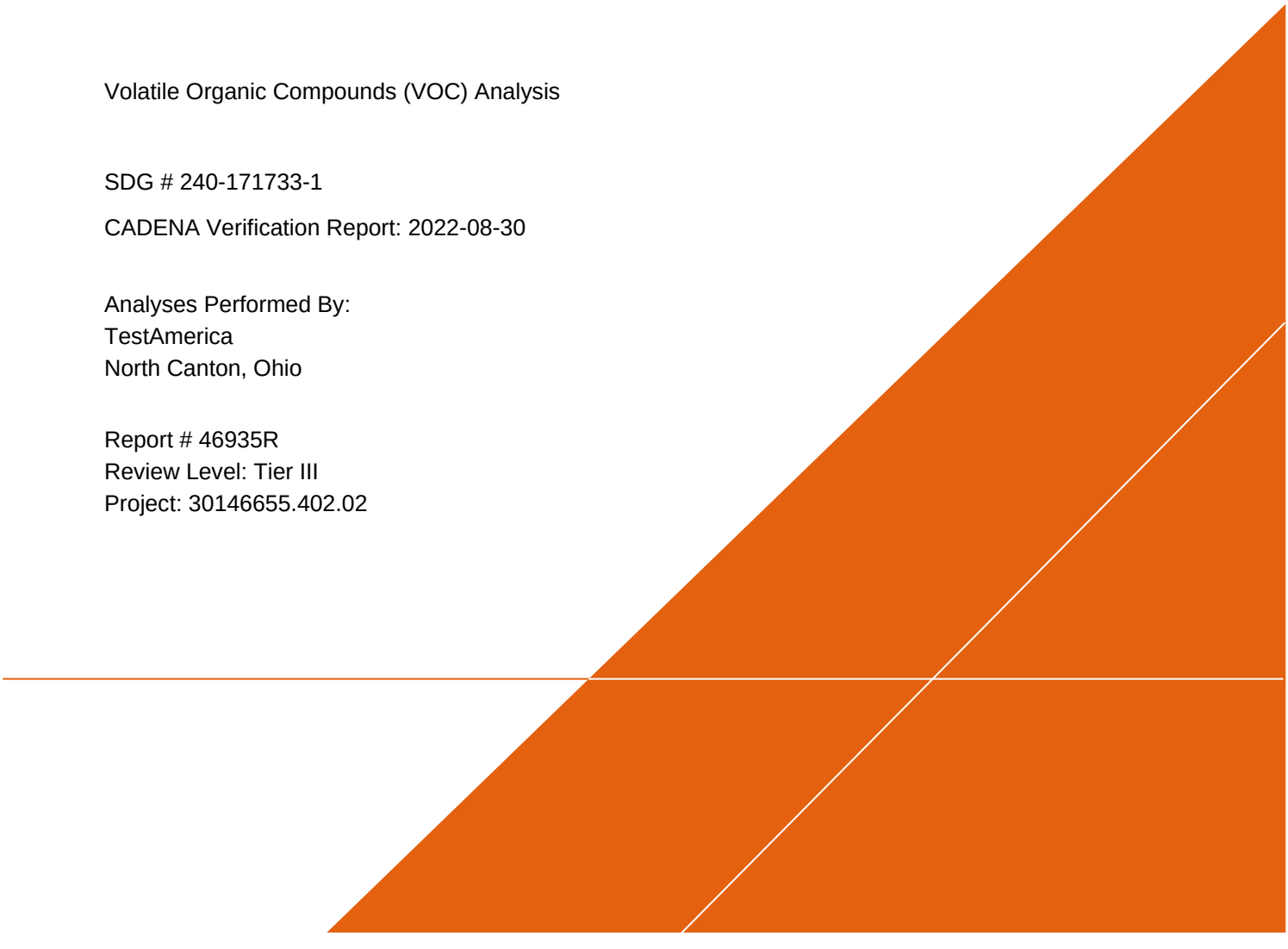
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171733-1

CADENA Verification Report: 2022-08-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46935R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171733-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_132	240-171733-1	Water	08/16/22		X	
MW-166S_081622	240-171733-2	Water	08/16/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_132 MW-166S_081622	Continuous Calibration Verification %D	Tetrachloroethene	+21.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Lattie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_132	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1665_08162	8/16/22	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171733 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12147 Stark,

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/16/22 1515	NOVI COLD STORAGE	ARCADIS	8/16/22 1515
[signature]	Arcadis	8/17/22 1005	[signature]	EE TA	8/17/22 10:10
[signature]	EE TA	8/17/22 10:10	Received in Laboratory by: [signature]	Company: EETNC	Date/Time: 8-18-22 @1408 (One) 8-18-22

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Client Sample ID: TRIP BLANK_132
Lab Sample ID: 240-171733-1
Date Collected: 08/16/22 00:00
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/19/22 15:53*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:53*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/19/22 15:53*	*1*

Client Sample ID: MW-166S_081622
Lab Sample ID: 240-171733-2
Date Collected: 08/16/22 14:20
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 21:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/24/22 21:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/19/22 19:03*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*08/19/22 19:03*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 19:03*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/19/22 19:03*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171951-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/6/2022 8:00:58 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171951-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171951-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
Method 8260D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-540141.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171951-1	TRIP BLANK_104	Water	08/18/22 00:00	08/23/22 09:30
240-171951-2	MW-214S_081822	Water	08/18/22 10:46	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Client Sample ID: TRIP BLANK_104 — Lab Sample ID: 240-171951-1

No Detections.

Client Sample ID: MW-214S_081822 — Lab Sample ID: 240-171951-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Client Sample ID: TRIP BLANK_104
Date Collected: 08/18/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171951-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 22:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 22:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 22:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/25/22 22:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/25/22 22:15*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/25/22 22:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/25/22 22:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Client Sample ID: MW-214S_081822
Date Collected: 08/18/22 10:46
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171951-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 04:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/27/22 04:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 22:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 22:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 22:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 22:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/25/22 22:37*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/25/22 22:37*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/25/22 22:37*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/25/22 22:37*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171951-1	TRIP BLANK_104	109	97	99	99
240-171951-2	MW-214S_081822	108	96	98	98
LCS 240-540141/5	Lab Control Sample	94	90	91	90
MB 240-540141/8	Method Blank	102	91	95	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171951-2	MW-214S_081822	69
240-171965-G-5 MS	Matrix Spike	83
240-171965-M-5 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
MB 240-540396/4	Method Blank	71

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540141/8
Matrix: Water
Analysis Batch: 540141

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 13:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 13:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 13:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 13:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 13:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 13:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/25/22 13:45*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/25/22 13:45*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/25/22 13:45*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/25/22 13:45*	*1*

Lab Sample ID: LCS 240-540141/5
Matrix: Water
Analysis Batch: 540141

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	20.5		ug/L		103	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	21.3		ug/L		106	75 - 124
Trichloroethene	20.0	19.5		ug/L		98	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.61		ug/L		96	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-G-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-M-5 MSD
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

GC/MS VOA

Analysis Batch: 540141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171951-1	TRIP BLANK_104	Total/NA	Water	8260D	
240-171951-2	MW-214S_081822	Total/NA	Water	8260D	
MB 240-540141/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540141/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171951-2	MW-214S_081822	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171965-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Client Sample ID: TRIP BLANK_104

Lab Sample ID: 240-171951-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540141	TJL1	EET CAN	08/25/22 22:15

Client Sample ID: MW-214S_081822

Lab Sample ID: 240-171951-2

Date Collected: 08/18/22 10:46

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540141	TJL1	EET CAN	08/25/22 22:37
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 04:20

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_104	8/18/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2145_081822	08/18/22	1046		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171951 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Commercial Property 12400 BELDEN CT.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/19/22 1633	Novi cold storage	Arcadis	8/19/22 1633
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Received in Laboratory by:	TestAmerica	8.23.22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Handel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler (Box) Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	Yes	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	(Yes)	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC[illegible] 286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171951-1
Sample date: 2022-08-18
Report received by CADENA: 2022-09-06
Initial Data Verification completed by CADENA: 2022-09-06
Number of Samples:2
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171951-1

		Sample Name:	TRIP BLANK_104				MW-214S_081822			
		Lab Sample ID:	2401719511				2401719512			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

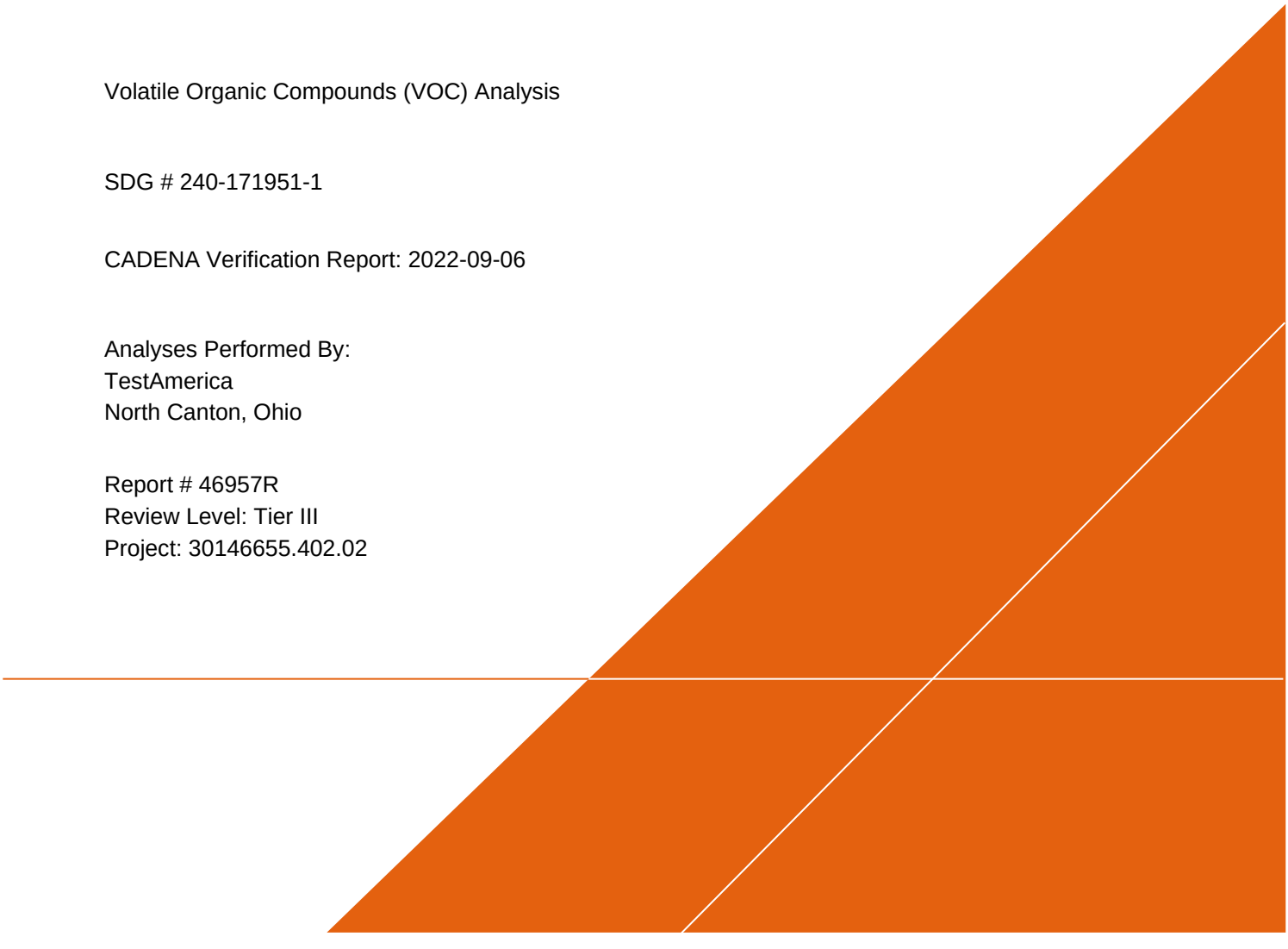
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171951-1

CADENA Verification Report: 2022-09-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46957R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171951-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_104	240-171951-1	Water	08/18/22		X	
MW-214S_081822	240-171951-2	Water	08/18/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_104	8/18/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2145_081822	08/18/22	1046		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171951 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Commercial Property 12400 BELDEN CT.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/19/22 1633	Novi cold storage	Arcadis	8/19/22 1633
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Received in Laboratory by:	TestAmerica	8.23.22 9:30

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Client Sample ID: TRIP BLANK_104
Date Collected: 08/18/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171951-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 22:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 22:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 22:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/25/22 22:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/25/22 22:15*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/25/22 22:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/25/22 22:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171951-1

Client Sample ID: MW-214S_081822
Date Collected: 08/18/22 10:46
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171951-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 04:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/27/22 04:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 22:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 22:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 22:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 22:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 22:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/25/22 22:37*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/25/22 22:37*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/25/22 22:37*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/25/22 22:37*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171519-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:08:34 AM
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Job ID: 240-171519-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171519-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171519-1	TRIP BLANK_76	Water	08/10/22 00:00	08/13/22 09:45
240-171519-2	MW-128S_081022	Water	08/10/22 14:18	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Client Sample ID: TRIP BLANK_76 — Lab Sample ID: 240-171519-1

No Detections.

Client Sample ID: MW-128S_081022 — Lab Sample ID: 240-171519-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Client Sample ID: TRIP BLANK_76
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171519-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 14:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 14:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 14:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 14:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/16/22 14:32*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/16/22 14:32*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/16/22 14:32*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/16/22 14:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Client Sample ID: MW-128S_081022
Date Collected: 08/10/22 14:18
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171519-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/20/22 17:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 16:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 16:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 16:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/16/22 16:37*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/16/22 16:37*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/16/22 16:37*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/16/22 16:37*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171519-1	TRIP BLANK_76	95	89	94	85
240-171519-2	MW-128S_081022	93	90	95	84
240-171520-F-3 MS	Matrix Spike	91	97	96	85
240-171520-O-3 MSD	Matrix Spike Duplicate	90	96	98	83
LCS 240-539087/4	Lab Control Sample	89	97	97	85
MB 240-539087/6	Method Blank	93	88	92	83

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171519-2	MW-128S_081022	69
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539087/6
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 13:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 13:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 13:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 13:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 13:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 13:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/16/22 13:42*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/16/22 13:42*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/16/22 13:42*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/16/22 13:42*	*1*

Lab Sample ID: LCS 240-539087/4
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.1		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	24.2		ug/L		97	77 - 123
Tetrachloroethene	25.0	23.3		ug/L		93	76 - 123
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	11.1		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171520-F-3 MS
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.1		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	1.0	U	12.5	11.9		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171520-F-3 MS
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171520-O-3 MSD
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	25.0	21.1		ug/L		84	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	12.3		ug/L		98	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

GC/MS VOA

Analysis Batch: 539087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171519-1	TRIP BLANK_76	Total/NA	Water	8260D	
240-171519-2	MW-128S_081022	Total/NA	Water	8260D	
MB 240-539087/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539087/4	Lab Control Sample	Total/NA	Water	8260D	
240-171520-F-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171520-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171519-2	MW-128S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Client Sample ID: TRIP BLANK_76

Lab Sample ID: 240-171519-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539087	SAM	EET CAN	08/16/22 14:32

Client Sample ID: MW-128S_081022

Lab Sample ID: 240-171519-2

Date Collected: 08/10/22 14:18

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539087	SAM	EET CAN	08/16/22 16:37
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 17:30

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hindle	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 70	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-128S_081022	8/10/22	1418		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171519 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34360 Capitol St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindle	Arcadis	8/10/22 16:00	NOVI cold storage	Arcadis	8/10/22 16:00
	Arcadis	8/12/22 955		EETA	8/12/22 956
	EETA	8/12/22 958	Received in Laboratory by:	EETNC	8-13-22 0945

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171519
Barberton Facility

Client Arcadis Site Name Livonia

Cooler Received on 8-13-22 Opened on 8-13-22

Cooler unpacked by: me

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	(Yes)	No
If yes, Questions 13-17 have been checked at the originating laboratory.	me	8-13-22
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.

Sample(s) ____ were received in a broken container.

Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.

Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171519-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171519-1

		Sample Name:	TRIP BLANK_76				MW-128S_081022			
		Lab Sample ID:	2401715191				2401715192			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

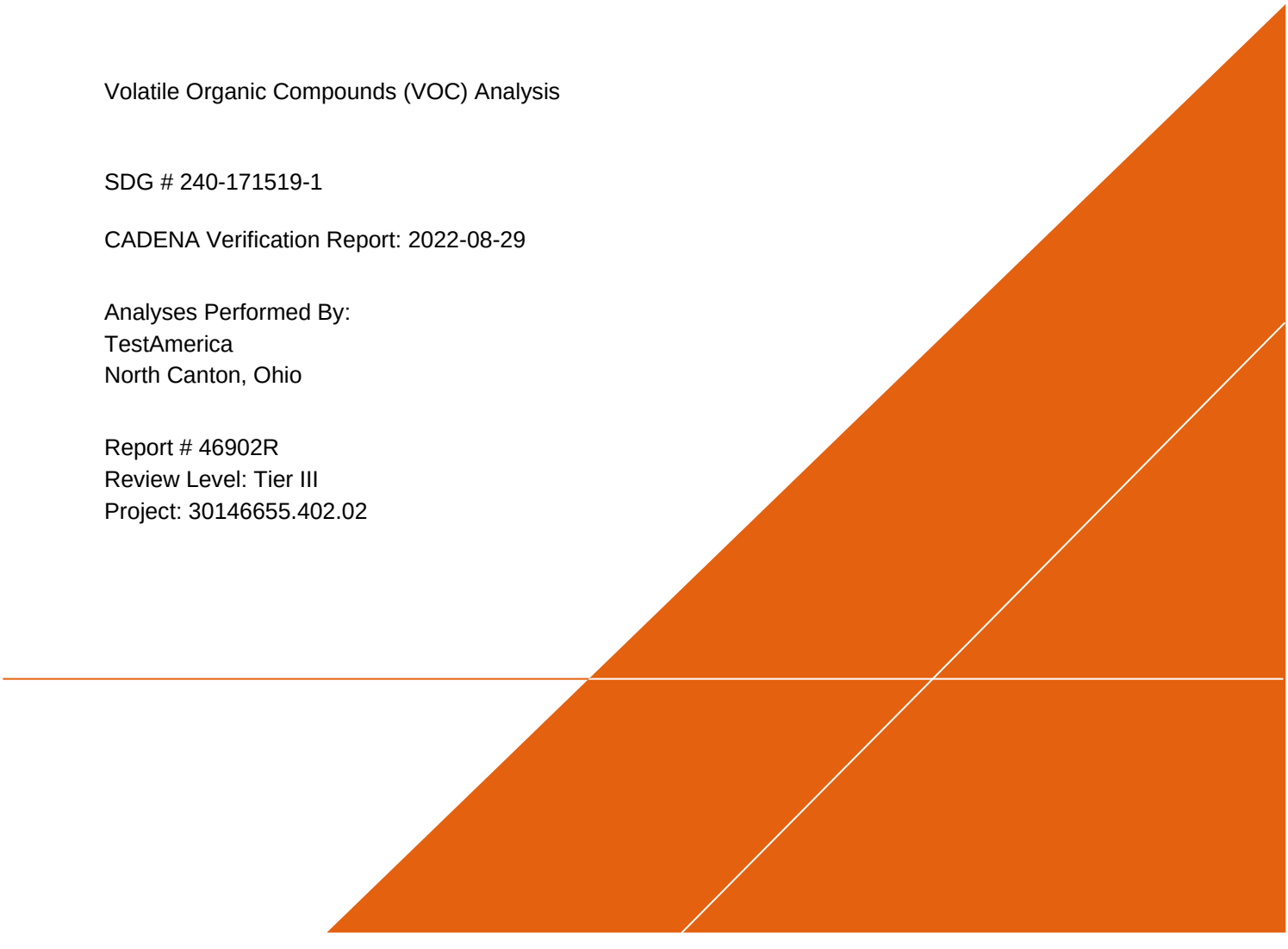
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171519-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46902R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171519-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_76	240-171519-1	Water	08/10/22		X	
MW-128S_081022	240-171519-2	Water	08/10/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 26, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hindle	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 70	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-128S_081022	8/10/22	1418		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171519 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34360 Capitol St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindle	Arcadis	8/10/22 16:00	NOVI cold storage	Arcadis	8/10/22 16:00
	Arcadis	8/12/22 955	Jeri Hall	EETA	8/12/22 956
Jeri Hall	EETA	8/12/22 958	Jessica Lee	EETNC	8-13-22 0945

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Client Sample ID: TRIP BLANK_76
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171519-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 14:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 14:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 14:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 14:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/16/22 14:32*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/16/22 14:32*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/16/22 14:32*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/16/22 14:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171519-1

Client Sample ID: MW-128S_081022
Date Collected: 08/10/22 14:18
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171519-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/20/22 17:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 16:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 16:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 16:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/16/22 16:37*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/16/22 16:37*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/16/22 16:37*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/16/22 16:37*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171635-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 12:50:27 PM
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Designee for

Michael DelMonico, Project Manager I
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LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Job ID: 240-171635-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171635-1

Comments
No additional comments.

Receipt
The samples were received on 8/17/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171635-1	TRIP BLANK_117	Water	08/15/22 00:00	08/17/22 09:30
240-171635-2	MW-146S_081522	Water	08/15/22 13:30	08/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Client Sample ID: TRIP BLANK_117 — Lab Sample ID: 240-171635-1

No Detections.

Client Sample ID: MW-146S_081522 — Lab Sample ID: 240-171635-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.93	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Client Sample ID: TRIP BLANK_117
Date Collected: 08/15/22 00:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171635-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/18/22 16:09*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/18/22 16:09*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/18/22 16:09*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/18/22 16:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Client Sample ID: MW-146S_081522

Date Collected: 08/15/22 13:30
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171635-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.93	J	2.0	0.86	ug/L			08/22/22 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/22/22 21:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/18/22 16:34*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/18/22 16:34*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/18/22 16:34*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 16:34*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171635-1	TRIP BLANK_117	90	99	92	84
240-171635-2	MW-146S_081522	92	96	91	87
240-171636-D-2 MS	Matrix Spike	90	94	95	88
240-171636-E-2 MSD	Matrix Spike Duplicate	88	92	95	86
LCS 240-539364/5	Lab Control Sample	87	90	94	85
MB 240-539364/8	Method Blank	89	96	94	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171635-2	MW-146S_081522	70
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539364/8
Matrix: Water
Analysis Batch: 539364

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 12:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 12:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 12:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 12:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 12:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 12:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/18/22 12:49*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/18/22 12:49*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/18/22 12:49*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/18/22 12:49*	*1*

Lab Sample ID: LCS 240-539364/5
Matrix: Water
Analysis Batch: 539364

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.7		ug/L		84	63 - 134
cis-1,2-Dichloroethene	20.0	17.2		ug/L		86	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	18.8		ug/L		94	75 - 124
Trichloroethene	20.0	17.8		ug/L		89	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171636-D-2 MS
Matrix: Water
Analysis Batch: 539364

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	14.3		ug/L		72	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	15.6		ug/L		78	66 - 128
Tetrachloroethene	1.0	U	20.0	17.1		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 136
Trichloroethene	1.0	U	20.0	15.9		ug/L		80	61 - 124
Vinyl chloride	0.59	J	20.0	14.6		ug/L		70	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171636-D-2 MS
Matrix: Water
Analysis Batch: 539364

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171636-E-2 MSD
Matrix: Water
Analysis Batch: 539364

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.0		ug/L		85	56 - 135	17	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U	20.0	19.0		ug/L		95	62 - 131	11	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		97	56 - 136	14	15
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124	11	15
Vinyl chloride	0.59	J	20.0	18.5		ug/L		90	43 - 157	23	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/22/22 17:51*	*1*

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

GC/MS VOA

Analysis Batch: 539364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171635-1	TRIP BLANK_117	Total/NA	Water	8260D	
240-171635-2	MW-146S_081522	Total/NA	Water	8260D	
MB 240-539364/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539364/5	Lab Control Sample	Total/NA	Water	8260D	
240-171636-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171636-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171635-2	MW-146S_081522	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Client Sample ID: TRIP BLANK_117

Lab Sample ID: 240-171635-1

Date Collected: 08/15/22 00:00

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539364	LEE	EET CAN	08/18/22 16:09

Client Sample ID: MW-146S_081522

Lab Sample ID: 240-171635-2

Date Collected: 08/15/22 13:30

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539364	LEE	EET CAN	08/18/22 16:34
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 21:29

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171635-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_117	8/15/22	—		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-1465_081522	8/15/22	1330		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171635 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34367 Capitol St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/15/22 1415	NOVI COLDSTORAGE	ARCADIS	8/15/22 1415
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/16/22 1116	[signature]	EETA	8/16/22 11:15
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	8/16/22 1120	[signature]	EETMC	8-17-22 930

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171635
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-17-22 Opened on 8-17-22

Cooler unpacked by: Nancy Boyer

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	Yes	No
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171635-1
Sample date: 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171635-1

		Sample Name:	TRIP BLANK_117				MW-146S_081522			
		Lab Sample ID:	2401716351				2401716352			
		Sample Date:	8/15/2022				8/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					0.93	2.0	ug/l	J

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

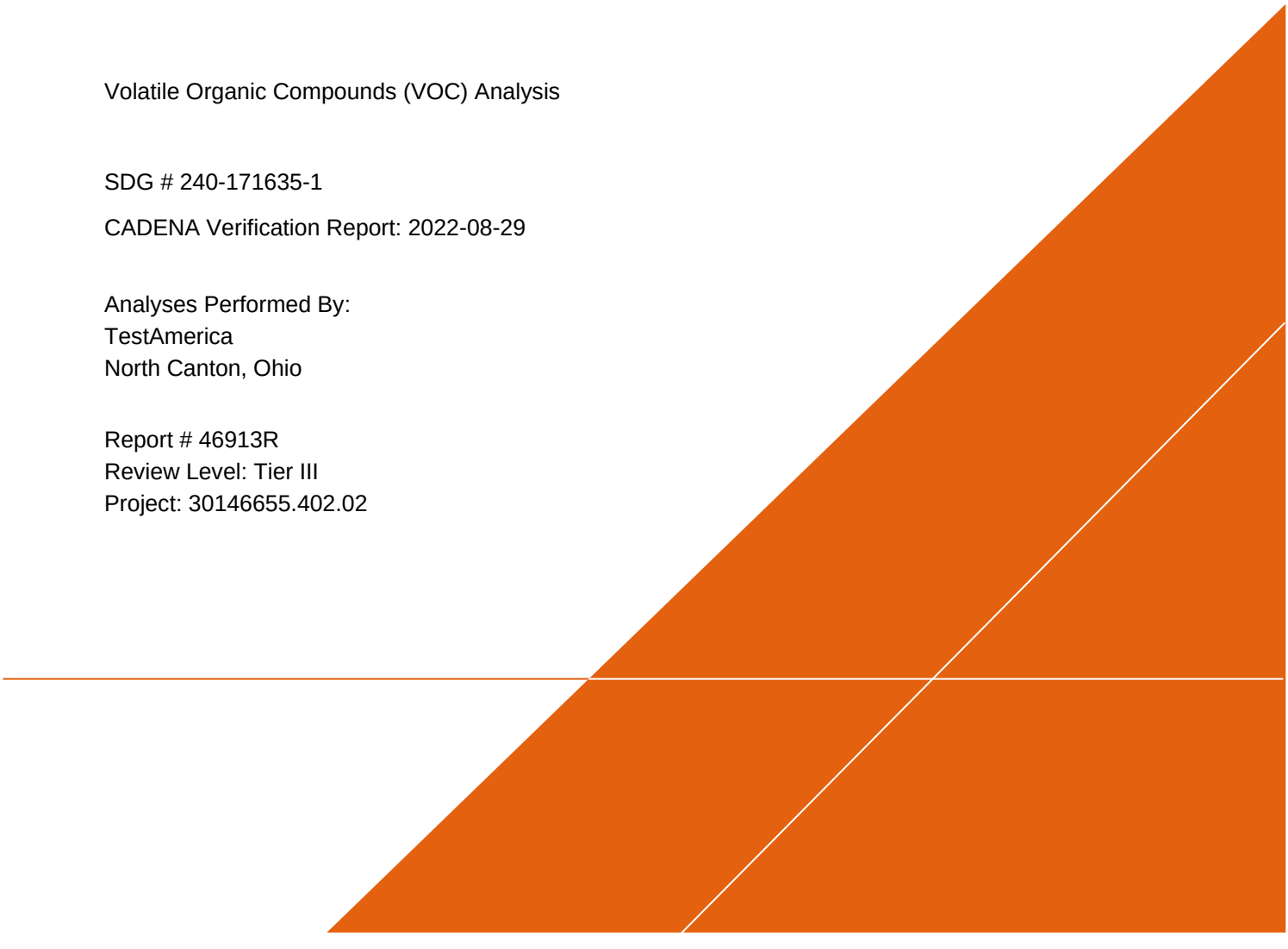
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171635-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46913R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171635-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_117	240-171635-1	Water	08/15/22		X	
MW-146S_081522	240-171635-2	Water	08/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September XX, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_117	8/15/22	—		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-1465_081522	8/15/22	1330		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171635 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34367 Capitol St.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lgeyl	ARCADIS	8/15/22 1415	NOVI COLDSTORAGE	ARCADIS	8/15/22 1415
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/16/22 1116		EETA	8/16/22 1115
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/16/22 1120		EETNC	8-17-22 930

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Client Sample ID: TRIP BLANK_117
Lab Sample ID: 240-171635-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/18/22 16:09*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/18/22 16:09*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/18/22 16:09*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/18/22 16:09*	*1*

Client Sample ID: MW-146S_081522
Lab Sample ID: 240-171635-2
Date Collected: 08/15/22 13:30
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.93**	**J**	2.0	0.86	ug/L			08/22/22 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/22/22 21:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/18/22 16:34*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/18/22 16:34*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/18/22 16:34*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 16:34*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171936-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 9:07:36 AM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Job ID: 240-171936-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171936-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171936-1	TRIP BLANK_162	Water	08/19/22 00:00	08/23/22 09:30
240-171936-2	MW-150S_081922	Water	08/19/22 12:35	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Client Sample ID: TRIP BLANK_162 — Lab Sample ID: 240-171936-1

No Detections.

Client Sample ID: MW-150S_081922 — Lab Sample ID: 240-171936-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Client Sample ID: TRIP BLANK_162
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171936-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 14:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 14:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 14:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 14:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 14:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/24/22 14:51*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/24/22 14:51*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/24/22 14:51*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/24/22 14:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Client Sample ID: MW-150S_081922

Date Collected: 08/19/22 12:35
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171936-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/27/22 04:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 18:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 18:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 18:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/24/22 18:23*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/24/22 18:23*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/24/22 18:23*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/24/22 18:23*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171854-C-5 MS	Matrix Spike	87	92	95	92
240-171854-C-5 MSD	Matrix Spike Duplicate	89	94	96	93
240-171936-1	TRIP BLANK_162	100	96	101	103
240-171936-2	MW-150S_081922	95	91	97	100
LCS 240-539996/5	Lab Control Sample	95	102	106	99
MB 240-539996/8	Method Blank	98	97	102	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171936-2	MW-150S_081922	86
240-171972-G-3 MS	Matrix Spike	88
240-171972-M-3 MSD	Matrix Spike Duplicate	87
LCS 240-540388/3	Lab Control Sample	92
MB 240-540388/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539996/8
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/24/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/24/22 13:39*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/24/22 13:39*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/24/22 13:39*	*1*

Lab Sample ID: LCS 240-539996/5
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.9		ug/L		91	77 - 123
Tetrachloroethene	25.0	28.6		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	25.9		ug/L		104	70 - 122
Vinyl chloride	25.0	20.7		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171854-C-5 MS
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	313	285		ug/L		91	56 - 135
cis-1,2-Dichloroethene	120		313	391		ug/L		87	66 - 128
Tetrachloroethene	13	U	313	345		ug/L		110	62 - 131
trans-1,2-Dichloroethene	13	U	313	275		ug/L		88	56 - 136
Trichloroethene	13	U	313	300		ug/L		96	61 - 124
Vinyl chloride	280		313	501		ug/L		71	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171854-C-5 MS
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-171854-C-5 MSD
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	313	269		ug/L		86	56 - 135	6	26
cis-1,2-Dichloroethene	120		313	386		ug/L		86	66 - 128	1	14
Tetrachloroethene	13	U	313	344		ug/L		110	62 - 131	0	20
trans-1,2-Dichloroethene	13	U	313	276		ug/L		88	56 - 136	0	15
Trichloroethene	13	U	313	297		ug/L		95	61 - 124	1	15
Vinyl chloride	280		313	494		ug/L		69	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		62 - 137
4-Bromofluorobenzene (Surr)	94		56 - 136
Toluene-d8 (Surr)	96		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540388/4
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 18:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		66 - 120		08/26/22 18:32	1

Lab Sample ID: LCS 240-540388/3
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		66 - 120

Lab Sample ID: 240-171972-G-3 MS
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

Lab Sample ID: 240-171972-M-3 MSD
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.5		ug/L		115	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

GC/MS VOA

Analysis Batch: 539996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171936-1	TRIP BLANK_162	Total/NA	Water	8260D	
240-171936-2	MW-150S_081922	Total/NA	Water	8260D	
MB 240-539996/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539996/5	Lab Control Sample	Total/NA	Water	8260D	
240-171854-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-171854-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171936-2	MW-150S_081922	Total/NA	Water	8260D SIM	
MB 240-540388/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540388/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171972-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171972-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Client Sample ID: TRIP BLANK_162

Lab Sample ID: 240-171936-1

Date Collected: 08/19/22 00:00

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 14:51

Client Sample ID: MW-150S_081922

Lab Sample ID: 240-171936-2

Date Collected: 08/19/22 12:35

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 18:23
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 04:14

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukalia	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_162	8/19/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-150s-081922	8/19/22	1235		G						G					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171936 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Beacon Brook Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #: 203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukalia	Arcadis	08/19/22/1400	Arcadis Cold Storage	Arcadis	08/19/22/1400
	ARCADIS	8/19/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Received in Laboratory by:	Eurofins	8-23-22 9:30

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9/2/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Rachelle Handel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? (Yes) No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 2867977
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
				☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

September 04, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171936-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-04
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171936-1

		Sample Name:	TRIP BLANK_162				MW-150S_081922			
		Lab Sample ID:	2401719361				2401719362			
		Sample Date:	8/19/2022				8/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

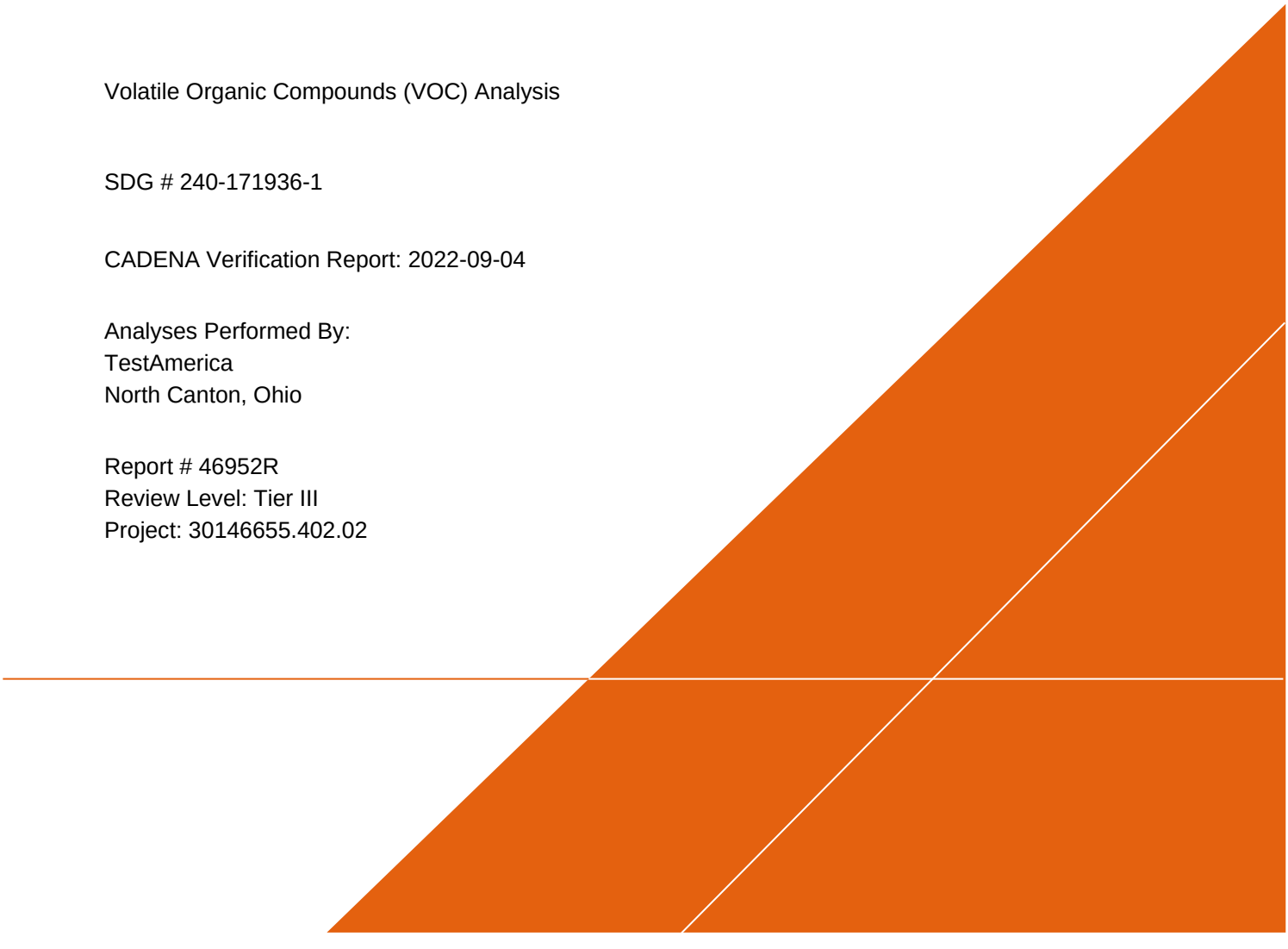
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171936-1

CADENA Verification Report: 2022-09-04

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46952R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171936-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_162	240-171936-1	Water	08/19/22		X	
MW-150S_081922	240-171936-2	Water	08/19/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukalia	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_162	8/19/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-150s-081922	8/19/22	1235		G						G					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171936 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Beacon Brook Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #: 203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukalia	Arcadis	08/19/22/1400	Arcadis Cold Storage	Arcadis	08/19/22/1400
	ARCADIS	8/19/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Received in Laboratory by:	Eurofins	8-23-22 9:30

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Client Sample ID: TRIP BLANK_162
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171936-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 14:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 14:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 14:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 14:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 14:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/24/22 14:51*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/24/22 14:51*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/24/22 14:51*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/24/22 14:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171936-1

Client Sample ID: MW-150S_081922

Date Collected: 08/19/22 12:35
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171936-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/27/22 04:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 18:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 18:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 18:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/24/22 18:23*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/24/22 18:23*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/24/22 18:23*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/24/22 18:23*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171300-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 1:50:33 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Job ID: 240-171300-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171300-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171300-1	TRIP BLANK_84	Water	08/08/22 00:00	08/10/22 13:12
240-171300-2	MW-90S_080822	Water	08/08/22 15:30	08/10/22 13:12

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Client Sample ID: TRIP BLANK_84 — Lab Sample ID: 240-171300-1

No Detections.

Client Sample ID: MW-90S_080822 — Lab Sample ID: 240-171300-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Client Sample ID: TRIP BLANK_84
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:12

Lab Sample ID: 240-171300-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/11/22 19:04*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 19:04*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/11/22 19:04*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/11/22 19:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Client Sample ID: MW-90S_080822

Date Collected: 08/08/22 15:30
Date Received: 08/10/22 13:12

Lab Sample ID: 240-171300-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 04:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/13/22 04:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/11/22 19:28*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 19:28*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 19:28*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 19:28*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171299-B-3 MSD	Matrix Spike Duplicate	96	116	115	99
240-171299-E-3 MS	Matrix Spike	99	117	118	103
240-171300-1	TRIP BLANK_84	108	105	108	111
240-171300-2	MW-90S_080822	111	105	110	116
LCS 240-538478/5	Lab Control Sample	95	119	117	101
MB 240-538478/8	Method Blank	110	105	110	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171299-I-3 MS	Matrix Spike	91
240-171299-O-3 MSD	Matrix Spike Duplicate	90
240-171300-2	MW-90S_080822	86
LCS 240-538760/3	Lab Control Sample	89
MB 240-538760/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538478/8
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 13:02*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 13:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 13:02*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 13:02*	*1*

Lab Sample ID: LCS 240-538478/5
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.8		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	21.8		ug/L		109	76 - 123
trans-1,2-Dichloroethene	20.0	20.5		ug/L		103	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*119*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-171299-E-3 MS
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	17.1		ug/L		86	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		62 - 137
4-Bromofluorobenzene (Surr)	117		56 - 136
Toluene-d8 (Surr)	118		78 - 122
Dibromofluoromethane (Surr)	103		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538760/4
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 21:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		66 - 120		08/12/22 21:10	1

Lab Sample ID: LCS 240-538760/3
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		66 - 120

Lab Sample ID: 240-171299-I-3 MS
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.99		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171299-O-3 MSD
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.83		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

GC/MS VOA

Analysis Batch: 538478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171300-1	TRIP BLANK_84	Total/NA	Water	8260D	
240-171300-2	MW-90S_080822	Total/NA	Water	8260D	
MB 240-538478/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538478/5	Lab Control Sample	Total/NA	Water	8260D	
240-171299-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171299-E-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 538760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171300-2	MW-90S_080822	Total/NA	Water	8260D SIM	
MB 240-538760/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538760/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171299-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171299-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Client Sample ID: TRIP BLANK_84

Lab Sample ID: 240-171300-1

Date Collected: 08/08/22 00:00

Matrix: Water

Date Received: 08/10/22 13:12

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 19:04

Client Sample ID: MW-90S_080822

Lab Sample ID: 240-171300-2

Date Collected: 08/08/22 15:30

Matrix: Water

Date Received: 08/10/22 13:12

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 19:28
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 04:45

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sykalia	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_84				1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-90s_080822	08/08/22	1530		5						5					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171300 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Month:

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Capital side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykalia	Arcadis	8/8/22 1650	Arcadis Cold Stor.	Arcadis	8/8/22 1650
Stu Stuart	Arcadis	8/9/22 1410	Jeri Hall	EEtA	8/9/22 1411
Jeri Hall	EEtA	8/9/22 1446	Received in Laboratory by: Mandaly Blue	EEtA	Date/Time: 8/10/22 9:30

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # T4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171300-1
Sample date: 2022-08-08
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171300-1

		Sample Name:	TRIP BLANK_84				MW-90S_080822			
		Lab Sample ID:	2401713001				2401713002			
		Sample Date:	8/8/2022				8/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

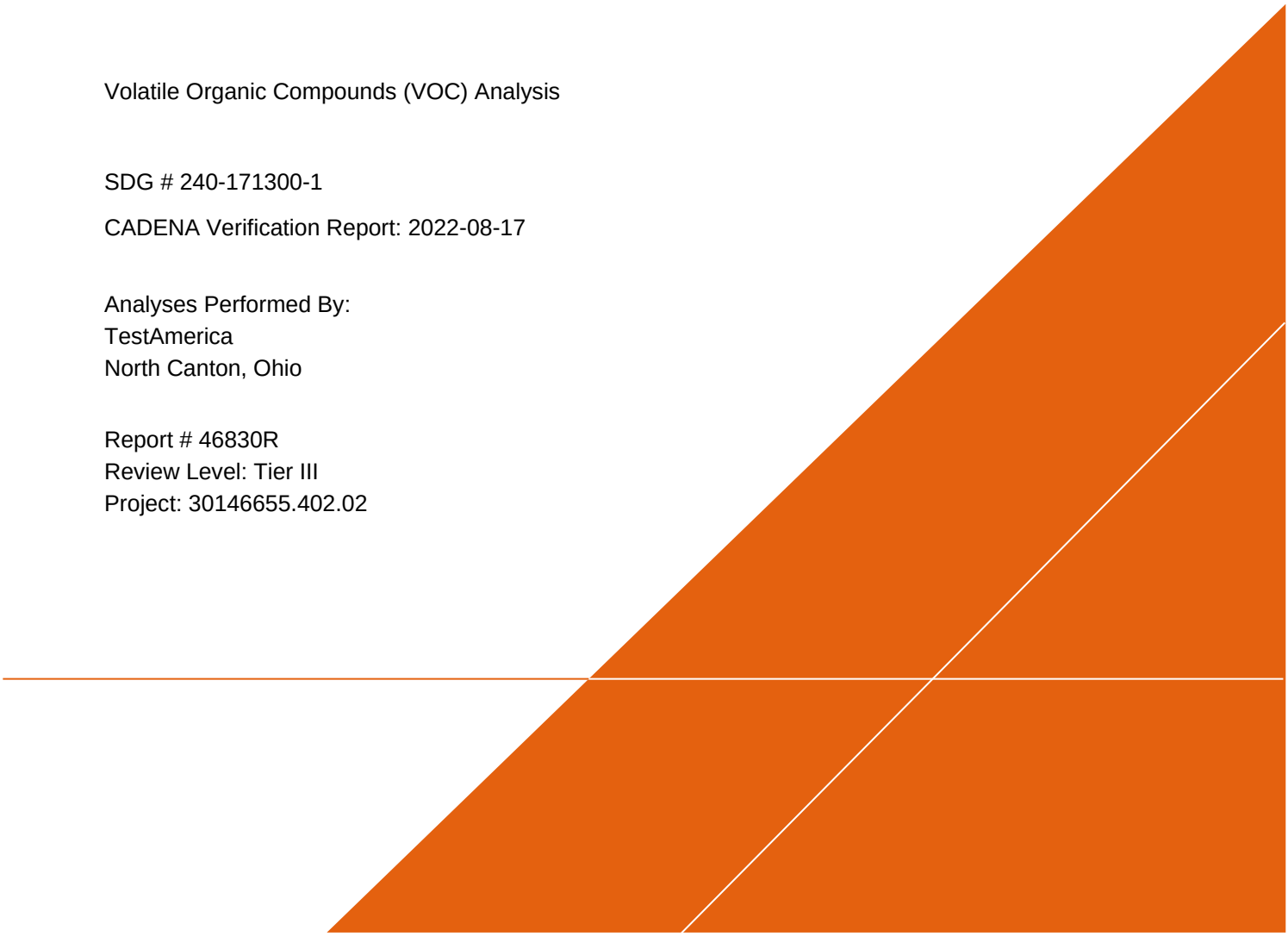
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171300-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46830R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171300-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_84	240-171300-1	Water	08/08/22		X	
MW-90S_080822	240-171300-2	Water	08/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sykalia	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_84				1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-90s_080822	08/08/22	1530		5						5					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171300 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Month:

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Capital side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykalia	Arcadis	8/8/22 1650	Arcadis Cold Stor.	Arcadis	8/8/22 1650
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/9/22 1410		EETA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/9/22 1446		EETA	8/10 22 9:30

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Client Sample ID: TRIP BLANK_84
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:12

Lab Sample ID: 240-171300-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/11/22 19:04*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 19:04*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/11/22 19:04*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/11/22 19:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171300-1

Client Sample ID: MW-90S_080822

Date Collected: 08/08/22 15:30
Date Received: 08/10/22 13:12

Lab Sample ID: 240-171300-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 04:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/13/22 04:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/11/22 19:28*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 19:28*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 19:28*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 19:28*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171636-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 12:53:07 PM
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Designee for

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LINKS
Review your project results through myEOL
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Job ID: 240-171636-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171636-1

Comments
No additional comments.

Receipt
The samples were received on 8/17/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171636-1	TRIP BLANK_114	Water	08/15/22 00:00	08/17/22 09:30
240-171636-2	MW-147S_081522	Water	08/15/22 10:15	08/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Client Sample ID: TRIP BLANK_114 — Lab Sample ID: 240-171636-1

No Detections.

Client Sample ID: MW-147S_081522 — Lab Sample ID: 240-171636-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.59	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Client Sample ID: TRIP BLANK_114
Date Collected: 08/15/22 00:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171636-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/18/22 16:59*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/18/22 16:59*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/18/22 16:59*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 16:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Client Sample ID: MW-147S_081522
Date Collected: 08/15/22 10:15
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171636-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/22/22 21:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 17:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 17:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 17:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:24	1
Vinyl chloride	**0.59**	**J**	1.0	0.45	ug/L			08/18/22 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/18/22 17:24*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/18/22 17:24*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/18/22 17:24*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/18/22 17:24*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171636-1	TRIP BLANK_114	92	98	95	87
240-171636-2	MW-147S_081522	89	95	95	86
240-171636-2 MS	MW-147S_081522	90	94	95	88
240-171636-2 MSD	MW-147S_081522	88	92	95	86
LCS 240-539364/5	Lab Control Sample	87	90	94	85
MB 240-539364/8	Method Blank	89	96	94	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171636-2	MW-147S_081522	70
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539364/8
Matrix: Water
Analysis Batch: 539364

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 12:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 12:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 12:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 12:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 12:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 12:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/18/22 12:49*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/18/22 12:49*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/18/22 12:49*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/18/22 12:49*	*1*

Lab Sample ID: LCS 240-539364/5
Matrix: Water
Analysis Batch: 539364

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.7		ug/L		84	63 - 134
cis-1,2-Dichloroethene	20.0	17.2		ug/L		86	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	18.8		ug/L		94	75 - 124
Trichloroethene	20.0	17.8		ug/L		89	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171636-2 MS
Matrix: Water
Analysis Batch: 539364

Client Sample ID: MW-147S_081522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	14.3		ug/L		72	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	15.6		ug/L		78	66 - 128
Tetrachloroethene	1.0	U	20.0	17.1		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 136
Trichloroethene	1.0	U	20.0	15.9		ug/L		80	61 - 124
Vinyl chloride	0.59	J	20.0	14.6		ug/L		70	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171636-2 MS
Matrix: Water
Analysis Batch: 539364

Client Sample ID: MW-147S_081522
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171636-2 MSD
Matrix: Water
Analysis Batch: 539364

Client Sample ID: MW-147S_081522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.0		ug/L		85	56 - 135	17	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		87	66 - 128	11	14
Tetrachloroethene	1.0	U	20.0	19.0		ug/L		95	62 - 131	11	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		97	56 - 136	14	15
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124	11	15
Vinyl chloride	0.59	J	20.0	18.5		ug/L		90	43 - 157	23	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/22/22 17:51*	*1*

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

GC/MS VOA

Analysis Batch: 539364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171636-1	TRIP BLANK_114	Total/NA	Water	8260D	
240-171636-2	MW-147S_081522	Total/NA	Water	8260D	
MB 240-539364/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539364/5	Lab Control Sample	Total/NA	Water	8260D	
240-171636-2 MS	MW-147S_081522	Total/NA	Water	8260D	
240-171636-2 MSD	MW-147S_081522	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171636-2	MW-147S_081522	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Client Sample ID: TRIP BLANK_114

Lab Sample ID: 240-171636-1

Date Collected: 08/15/22 00:00

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539364	LEE	EET CAN	08/18/22 16:59

Client Sample ID: MW-147S_081522

Lab Sample ID: 240-171636-2

Date Collected: 08/15/22 10:15

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539364	LEE	EET CAN	08/18/22 17:24
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 21:53

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171636-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_114	8/15/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1475_081522	8/15/22	1015		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-171636 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34401 Capitol St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Lottie Jay	Arcadis	8/15/22 1415	Novi cold Storage	Arcadis	8/15/22 1415
[illegible]	Arcadis	8/16/22 1116	[illegible]	TETA	8/16/22 1115
[illegible]	TETA	8/16/22 11:20	Received in Laboratory by: [illegible]	TETNC	Date/Time: 8-17-22 930

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171636
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-17-22 Opened on 8-17-22

Cooler unpacked by: Nancy Boyer

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171636-1
Sample date: 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171636-1

		Sample Name:	TRIP BLANK_114				MW-147S_081522			
		Lab Sample ID:	2401716361				2401716362			
		Sample Date:	8/15/2022				8/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.59	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

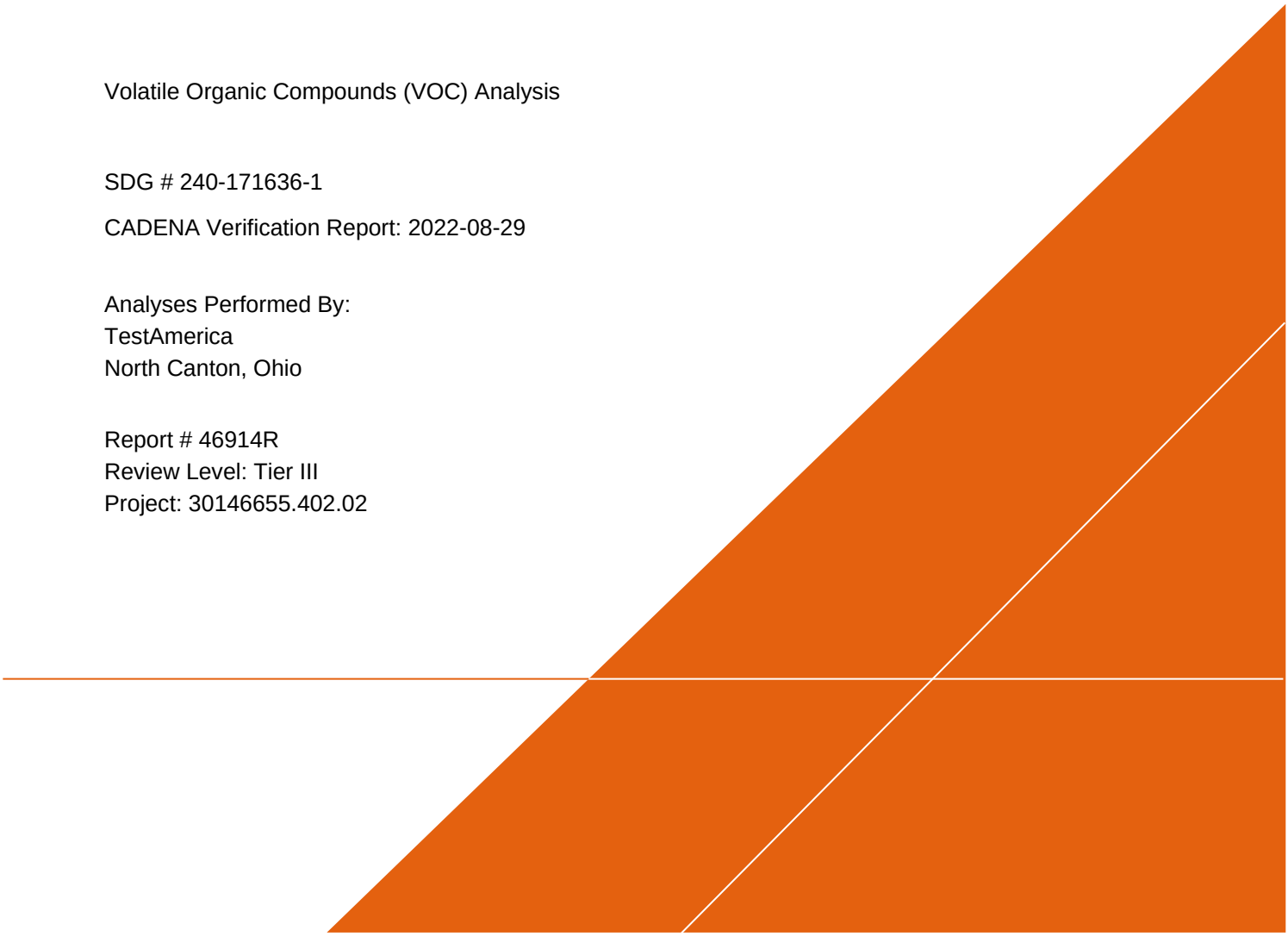
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171636-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46914R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171636-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_114	240-171636-1	Water	08/15/22		X	
MW-147S_081522	240-171636-2	Water	08/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com		
Phone: 248-994-2240	Sampler Name: Lottie Jay	Analysis Turnaround Time	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day	
Project Number: 30080642.402.04	Shipping/Tracking No:		
PO # 30080642.402.04			

COC No: 1 of 1 COCs

For lab use only: Walk-in client; Lab sampling; Job/SDG No

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 114	8/15/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1475_081522	8/15/22	1015		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-171636 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34401 Capitol St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Lottie Jay	Arcadis	8/15/22 1415	Novi cold Storage	Arcadis	8/15/22 1415
[illegible]	Arcadis	8/16/22 1116	[illegible]	EETA	8/16/22 11:15
[illegible]	EETA	8/16/22 11:20	Received in Laboratory by: [illegible]	EETNC	8-17-22 930

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Client Sample ID: TRIP BLANK_114
Lab Sample ID: 240-171636-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/18/22 16:59*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/18/22 16:59*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/18/22 16:59*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 16:59*	*1*

Client Sample ID: MW-147S_081522
Lab Sample ID: 240-171636-2
Date Collected: 08/15/22 10:15
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/22/22 21:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 17:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 17:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 17:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:24	1
Vinyl chloride	**0.59**	**J**	1.0	0.45	ug/L			08/18/22 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/18/22 17:24*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/18/22 17:24*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/18/22 17:24*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/18/22 17:24*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171862-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/31/2022 1:59:10 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Job ID: 240-171862-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171862-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171862-1	TRIP BLANK_116	Water	08/18/22 00:00	08/20/22 12:23
240-171862-2	MW-127S_081822	Water	08/18/22 13:00	08/20/22 12:23

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Client Sample ID: TRIP BLANK_116 — Lab Sample ID: 240-171862-1

No Detections.

Client Sample ID: MW-127S_081822 — Lab Sample ID: 240-171862-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Client Sample ID: TRIP BLANK_116
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 12:23

Lab Sample ID: 240-171862-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 20:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 20:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 20:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/23/22 20:40*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/23/22 20:40*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 20:40*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/23/22 20:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Client Sample ID: MW-127S_081822
Date Collected: 08/18/22 13:00
Date Received: 08/20/22 12:23

Lab Sample ID: 240-171862-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 04:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/26/22 04:09*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 21:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 21:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 21:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 21:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 21:03	1
Vinyl chloride	**2.1**		1.0	0.45	ug/L			08/23/22 21:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/23/22 21:03*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/23/22 21:03*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/23/22 21:03*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/23/22 21:03*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171856-B-3 MS	Matrix Spike	96	91	94	94
240-171856-C-3 MSD	Matrix Spike Duplicate	100	95	98	98
240-171862-1	TRIP BLANK_116	104	89	94	102
240-171862-2	MW-127S_081822	108	92	99	106
LCS 240-539824/5	Lab Control Sample	100	94	99	99
MB 240-539824/12	Method Blank	99	84	93	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171824-G-2 MS	Matrix Spike	90
240-171824-M-2 MSD	Matrix Spike Duplicate	90
240-171862-2	MW-127S_081822	89
LCS 240-540264/3	Lab Control Sample	90
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539824/12
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 14:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 14:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 14:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 14:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/23/22 14:26*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/23/22 14:26*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 14:26*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/23/22 14:26*	*1*

Lab Sample ID: LCS 240-539824/5
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.2		ug/L		91	63 - 134
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	77 - 123
Tetrachloroethene	20.0	20.4		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	17.1		ug/L		86	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.1		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171856-B-3 MS
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 136
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.1		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171856-B-3 MS
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-171856-C-3 MSD
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.3		ug/L		101	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	66 - 128	8	14
Tetrachloroethene	1.0	U	20.0	20.9		ug/L		104	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	20.0	19.0		ug/L		95	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	10	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540264/4
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-G-2 MS
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

GC/MS VOA

Analysis Batch: 539824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171862-1	TRIP BLANK_116	Total/NA	Water	8260D	
240-171862-2	MW-127S_081822	Total/NA	Water	8260D	
MB 240-539824/12	Method Blank	Total/NA	Water	8260D	
LCS 240-539824/5	Lab Control Sample	Total/NA	Water	8260D	
240-171856-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171856-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171862-2	MW-127S_081822	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171824-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Client Sample ID: TRIP BLANK_116

Lab Sample ID: 240-171862-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/20/22 12:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539824	AJS	EET CAN	08/23/22 20:40

Client Sample ID: MW-127S_081822

Lab Sample ID: 240-171862-2

Date Collected: 08/18/22 13:00

Matrix: Water

Date Received: 08/20/22 12:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539824	AJS	EET CAN	08/23/22 21:03
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 04:09

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171862-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sakaria	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 11F	8/18/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-127s_D81822	08/18/22	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~34424 Grand~~ side yard 34424 BEACON

Submit all results through Cadena at jfonfalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sakaria	Arcadis	08/18/22/1400	Arcadis Cold Storage	~~Arcadis~~ Arcadis	08/18/22/1400
	ARCADIS	8/18/22 / 1000		ETA	8/18/22 / 1000
	EETA	8/19/2022 11:00	Received in Laboratory by:	EETNC	8-20-22 0935

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240-171862 Chain of Custody

8/31/2022

17862 17862

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP
Cooler Received on 8-20-22 Opened on 8-20-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Cooler unpacked by: (me)

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171862-1
Sample date: 2022-08-18
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171862-1

		Sample Name:	TRIP BLANK_116				MW-127S_081822			
		Lab Sample ID:	2401718621				2401718622			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	2.1	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

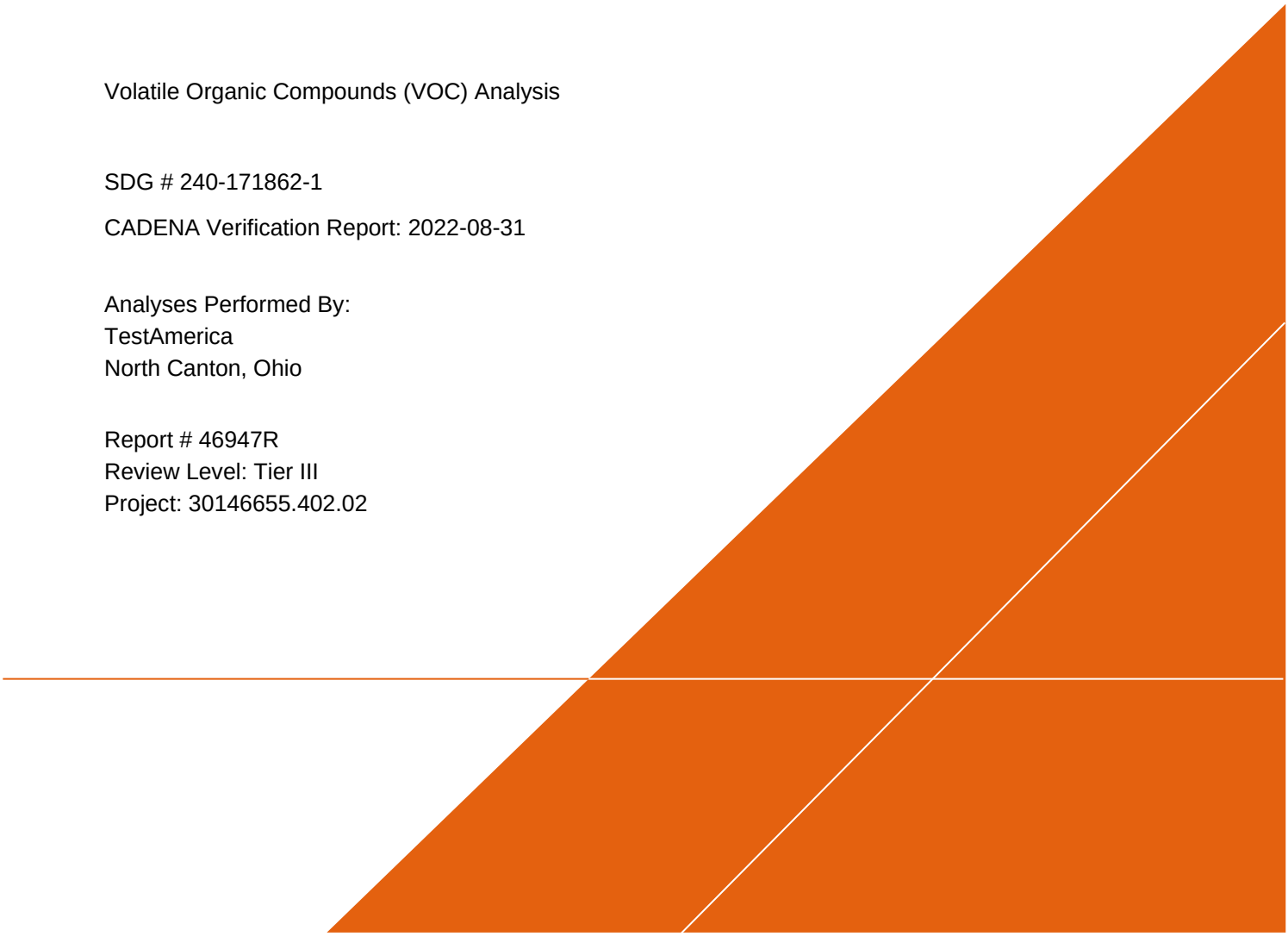
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171862-1

CADENA Verification Report: 2022-08-31

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46947R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171862-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_116	240-171862-1	Water	08/18/22		X	
MW-127S_081822	240-171862-2	Water	08/18/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783
City/State/Zip: Novi, MI. 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	COC No:
Phone: 248-994-2240	Sampler Name: Sam Sakaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)	1 of 1 COCs
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		For lab use only
Project Number: 30080642.402.04	Shipping/Tracking No:		Walk-in client
PO # 30080642.402.04			Lab sampling
			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 116	8/18/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-127s_081822	08/18/22	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171862 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: ~~34424~~ ~~Carport~~ side yard 34424 BEACON
Submit all results through Cadena at jfornalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sakaria	Arcadis	08/18/22/1400	Arcadis Cold Storage	~~ARCADIS~~ Arcadis	08/18/22/1400
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/18/22 / 1000		EETA	8/18/22 / 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/19/2022 11:00		EETNC	8-20-22 0935

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08/31/2022

Client Sample ID: TRIP BLANK_116
Lab Sample ID: 240-171862-1
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 12:23

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 20:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 20:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 20:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/23/22 20:40*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/23/22 20:40*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 20:40*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/23/22 20:40*	*1*

Client Sample ID: MW-127S_081822
Lab Sample ID: 240-171862-2
Date Collected: 08/18/22 13:00
Matrix: Water
Date Received: 08/20/22 12:23

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 04:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/26/22 04:09*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 21:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 21:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 21:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 21:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 21:03	1
Vinyl chloride	**2.1**		1.0	0.45	ug/L			08/23/22 21:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/23/22 21:03*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/23/22 21:03*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/23/22 21:03*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/23/22 21:03*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171148-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:21:56 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Job ID: 240-171148-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171148-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-103S_080422 (240-171148-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171148-1	TRIP BLANK_125	Water	08/04/22 00:00	08/06/22 10:00
240-171148-2	MW-103S_080422	Water	08/04/22 14:45	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Client Sample ID: TRIP BLANK_125 — Lab Sample ID: 240-171148-1

No Detections.

Client Sample ID: MW-103S_080422 — Lab Sample ID: 240-171148-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Client Sample ID: TRIP BLANK_125

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171148-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/10/22 16:13*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/10/22 16:13*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 16:13*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 16:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Client Sample ID: MW-103S_080422
Date Collected: 08/04/22 14:45
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171148-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*08/10/22 17:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 20:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 20:34*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 20:34*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/10/22 20:34*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/10/22 20:34*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171148-1	TRIP BLANK_125	106	98	104	110
240-171148-2	MW-103S_080422	105	95	103	111
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171148-2	MW-103S_080422	79
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171148-2	MW-103S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171148-1	TRIP BLANK_125	Total/NA	Water	8260D	
240-171148-2	MW-103S_080422	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Client Sample ID: TRIP BLANK_125

Lab Sample ID: 240-171148-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 16:13

Client Sample ID: MW-103S_080422

Lab Sample ID: 240-171148-2

Date Collected: 08/04/22 14:45

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 20:34
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 17:47

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukavig	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_125	8/4/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-103s_080422	08/04/22	1445		6						6					N	G	X	X	X	X	X	XX		3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171148 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34429 Capitol St, Back yard
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukavig	Arcadis	08/04/22/1620	Arcadis Cold Storage	Arcadis	08/04/22/1620
Sam Sukavig	Arcadis	8/5/22 1000	Jeri Hae	EETA	8/5/22 1001
Jeri Hae	EETA	8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171148
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171148

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171148-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171148-1

		Sample Name:	TRIP BLANK_125				MW-103S_080422			
		Lab Sample ID:	2401711481				2401711482			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

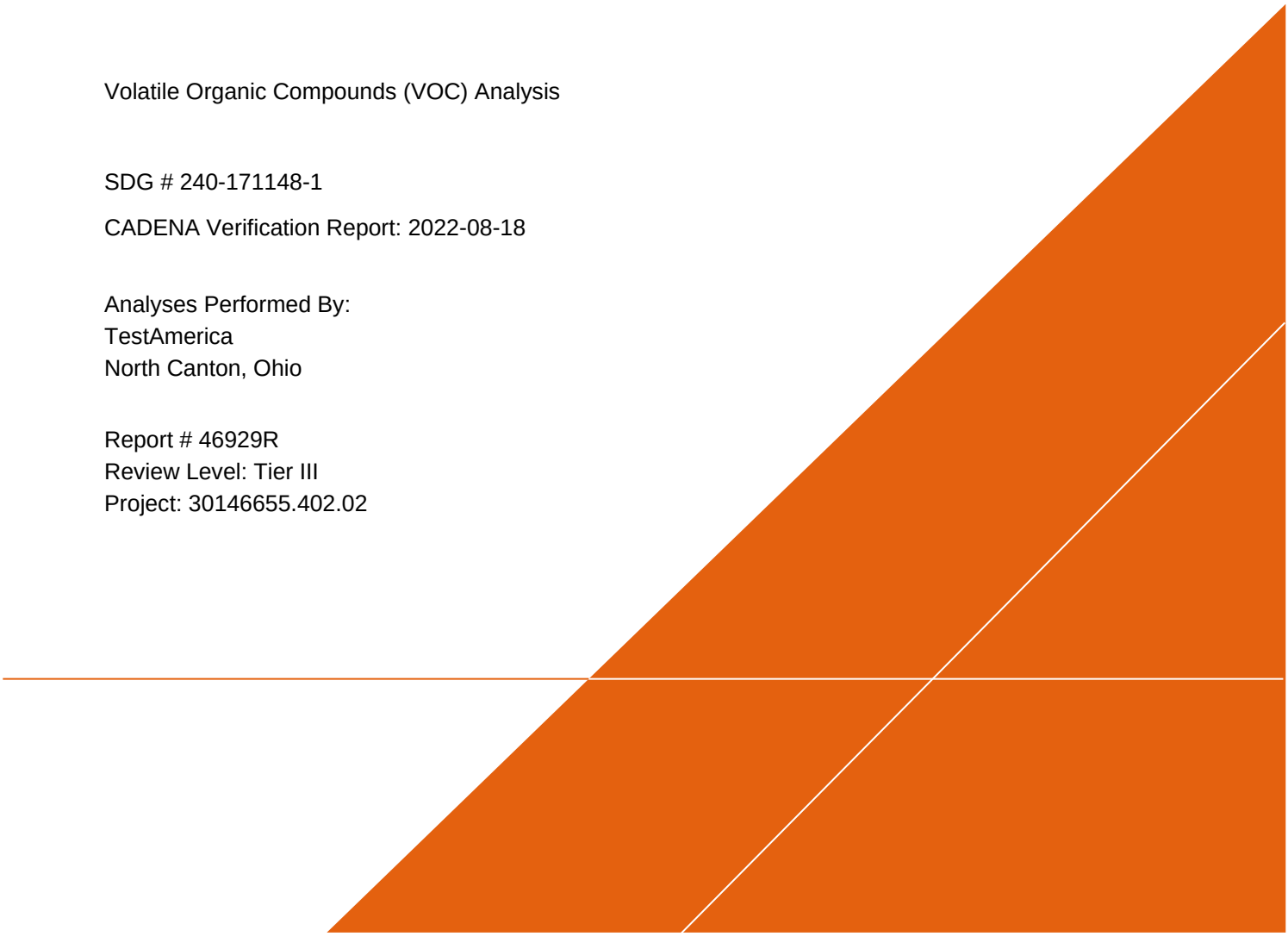
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171148-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46929R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171148-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_125	240-171148-1	Water	08/04/22		X	
MW-103S_080422	240-171148-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 21, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_125	8/4/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-103s_080422	08/04/22	1445		6						6					N	G	X	X	X	X	X	X		3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34429 Capitol St, Back yard

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/04/22/1620	Arcadis Cold Storage	Arcadis	08/04/22 1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/5/22 1000	Jen Hae	EETA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Hae	EETA	8/5/22 1030			

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Client Sample ID: TRIP BLANK_125

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171148-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/10/22 16:13*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/10/22 16:13*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 16:13*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 16:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171148-1

Client Sample ID: MW-103S_080422
Date Collected: 08/04/22 14:45
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171148-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*08/10/22 17:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 20:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 20:34*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 20:34*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/10/22 20:34*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/10/22 20:34*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171588-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 12:38:16 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Job ID: 240-171588-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171588-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171588-1	TRIP BLANK_17	Water	08/12/22 00:00	08/16/22 09:00
240-171588-2	MW-149S_081222	Water	08/12/22 14:55	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Client Sample ID: TRIP BLANK_17 — Lab Sample ID: 240-171588-1

No Detections.

Client Sample ID: MW-149S_081222 — Lab Sample ID: 240-171588-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.6		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Client Sample ID: TRIP BLANK_17
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171588-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 14:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 14:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 14:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 14:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 14:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/17/22 14:39*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 14:39*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/17/22 14:39*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/17/22 14:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Client Sample ID: MW-149S_081222
Date Collected: 08/12/22 14:55
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171588-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 23:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/20/22 23:50*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:25	1
Vinyl chloride	**3.6**		1.0	0.45	ug/L			08/17/22 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/17/22 18:25*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 18:25*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/17/22 18:25*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/17/22 18:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171526-D-11 MS	Matrix Spike	93	96	98	84
240-171526-I-11 MSD	Matrix Spike Duplicate	92	96	97	85
240-171588-1	TRIP BLANK_17	98	88	97	87
240-171588-2	MW-149S_081222	101	88	96	84
LCS 240-539235/4	Lab Control Sample	88	96	96	82
MB 240-539235/6	Method Blank	96	90	97	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171588-2	MW-149S_081222	72
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539235/6
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 13:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 13:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 13:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 13:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 13:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 13:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 13:49*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 13:49*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/17/22 13:49*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/17/22 13:49*	*1*

Lab Sample ID: LCS 240-539235/4
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.7		ug/L		91	63 - 134
cis-1,2-Dichloroethene	25.0	21.7		ug/L		87	77 - 123
Tetrachloroethene	25.0	21.6		ug/L		87	76 - 123
trans-1,2-Dichloroethene	25.0	21.8		ug/L		87	75 - 124
Trichloroethene	25.0	20.7		ug/L		83	70 - 122
Vinyl chloride	12.5	11.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Lab Sample ID: 240-171526-D-11 MS
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	19.8		ug/L		79	61 - 124
Vinyl chloride	1.0	U	12.5	11.9		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171526-I-11 MSD
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	22.0		ug/L		88	62 - 131	9	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	6	15
Trichloroethene	1.0	U	25.0	21.5		ug/L		86	61 - 124	8	15
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.4		ug/L		104	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

GC/MS VOA

Analysis Batch: 539235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171588-1	TRIP BLANK_17	Total/NA	Water	8260D	
240-171588-2	MW-149S_081222	Total/NA	Water	8260D	
MB 240-539235/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539235/4	Lab Control Sample	Total/NA	Water	8260D	
240-171526-D-11 MS	Matrix Spike	Total/NA	Water	8260D	
240-171526-I-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171588-2	MW-149S_081222	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Client Sample ID: TRIP BLANK_17

Lab Sample ID: 240-171588-1

Date Collected: 08/12/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 14:39

Client Sample ID: MW-149S_081222

Lab Sample ID: 240-171588-2

Date Collected: 08/12/22 14:55

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 18:25
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 23:50

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171588-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_17	8/12/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-149S_081222	08/12/22	1455		6						6					N	G	X	X	X	X	X	X		3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171588 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address 34450 Beacon Backyard

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/12/22 1610	Arcadis Cold Stor.	Arcadis	08/12/22 1610
[signature]	Arcadis	8/12/22 1005	[signature]	EETA	10:00 8/15/2022
[signature]	EETA	8/15/22 10:00	[signature]	EETNC	8/16/22 0900

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171588
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by:

Cooler Received on 5-16-22 Opened on 5-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water ✓None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y)N), # of containers (Y)N), and sample type of grab/comp(Y)N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171585

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171588-1
Sample date: 2022-08-12
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171588-1

		Sample Name:	TRIP BLANK_17				MW-149S_081222			
		Lab Sample ID:	2401715881				2401715882			
		Sample Date:	8/12/2022				8/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.6	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171139-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 2:03:40 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171139-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171139-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-169S_080422 (240-171139-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171139-1	TRIP BLANK_126	Water	08/04/22 00:00	08/06/22 10:00
240-171139-2	MW-169S_080422	Water	08/04/22 13:20	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Client Sample ID: TRIP BLANK_126 — Lab Sample ID: 240-171139-1

No Detections.

Client Sample ID: MW-169S_080422 — Lab Sample ID: 240-171139-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Client Sample ID: TRIP BLANK_126

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171139-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/10/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/10/22 17:22*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/10/22 17:22*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/10/22 17:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Client Sample ID: MW-169S_080422
Date Collected: 08/04/22 13:20
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171139-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 14:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/10/22 14:00*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/10/22 17:45*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/10/22 17:45*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/10/22 17:45*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/10/22 17:45*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171115-E-1 MS	Matrix Spike	92	88	90	88
240-171115-H-1 MSD	Matrix Spike Duplicate	98	97	98	95
240-171139-1	TRIP BLANK_126	103	87	93	96
240-171139-2	MW-169S_080422	106	92	96	102
LCS 240-538239/5	Lab Control Sample	99	98	98	96
MB 240-538239/8	Method Blank	97	84	90	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171139-2	MW-169S_080422	84
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538239/8
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 11:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 11:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 11:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 11:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 11:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 11:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/10/22 11:10*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/10/22 11:10*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/10/22 11:10*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/10/22 11:10*	*1*

Lab Sample ID: LCS 240-538239/5
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		95	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		95	77 - 123
Tetrachloroethene	20.0	17.7		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	19.3		ug/L		97	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	17.0		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171115-E-1 MS
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128
Tetrachloroethene	1.0	U	20.0	17.3		ug/L		86	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 136
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124
Vinyl chloride	1.0	U	20.0	16.4		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171115-E-1 MS
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	88		73 - 120

Lab Sample ID: 240-171115-H-1 MSD
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 136	4	15
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	16.7		ug/L		84	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	97		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	95		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		08/10/22 12:16	1

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

GC/MS VOA

Analysis Batch: 538239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171139-1	TRIP BLANK_126	Total/NA	Water	8260D	
240-171139-2	MW-169S_080422	Total/NA	Water	8260D	
MB 240-538239/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538239/5	Lab Control Sample	Total/NA	Water	8260D	
240-171115-E-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-171115-H-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171139-2	MW-169S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Client Sample ID: TRIP BLANK_126

Lab Sample ID: 240-171139-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538239	TJL1	EET CAN	08/10/22 17:22

Client Sample ID: MW-169S_080422

Lab Sample ID: 240-171139-2

Date Collected: 08/04/22 13:20

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538239	TJL1	EET CAN	08/10/22 17:45
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 14:00

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171139-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sykaris	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_126	8/4/22	—		X						2					N	G	X	X	X	X	X	X		1 Trip Blank
MW-[illegible]-080422	08/04/22	1320		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171139 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon st front yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203621

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaris	Arcadis	08/04/22/1620	Arcadis Cold Storage	Arcadis	08/04/22/1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/5/22 1000	[signature]	EETA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	8/5/22 1030			

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171135
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171139

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171139-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171139-1

		Sample Name:	TRIP BLANK_126				MW-169S_080422			
		Lab Sample ID:	2401711391				2401711392			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

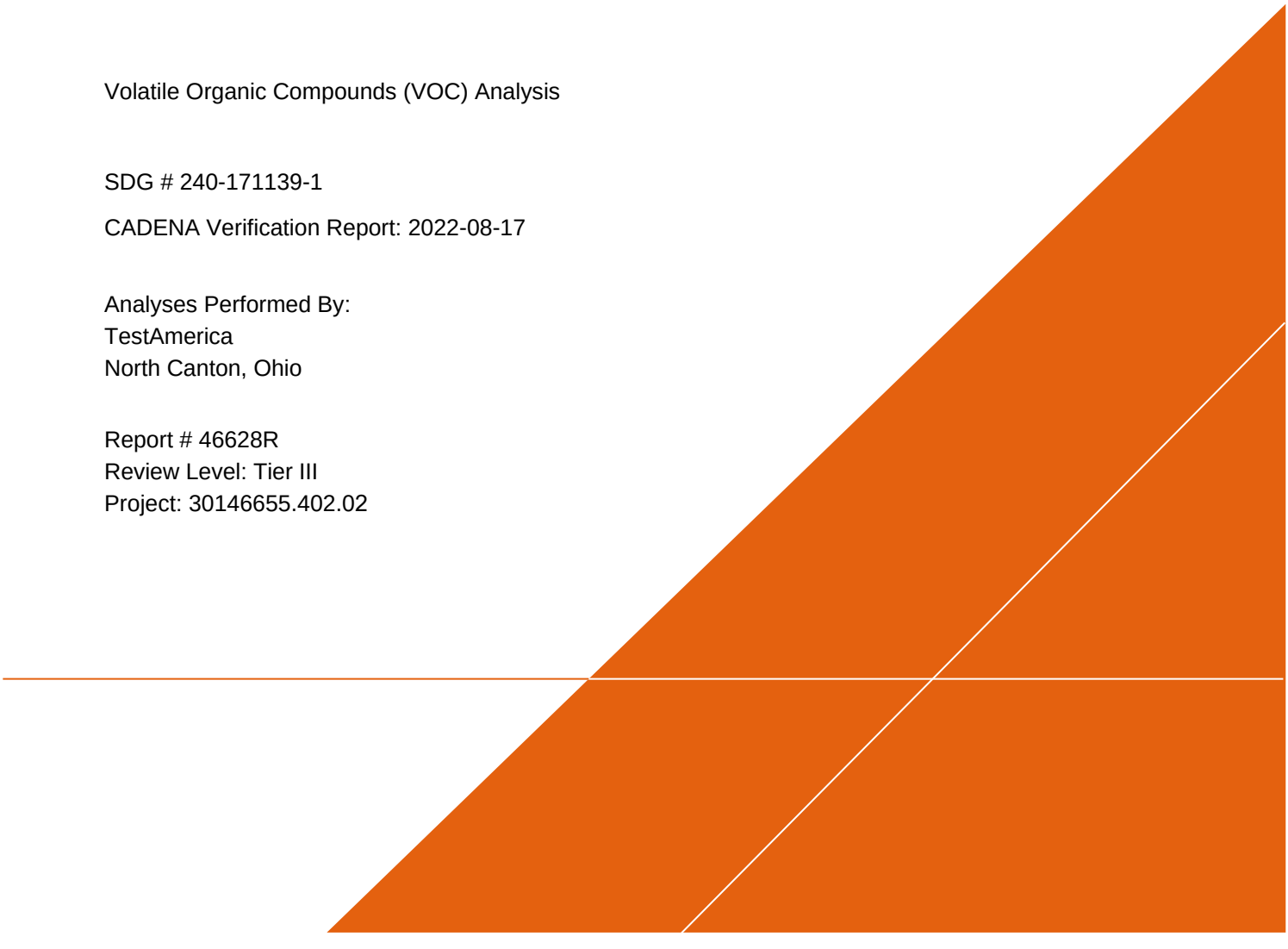
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171139-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46628R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171139-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_126	240-171139-1	Water	08/04/22		X	
MW-169S_080422	240-171139-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sykaris	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_176	8/4/22	—		X						2					N	G	X	X	X	X	X	X		1 Trip Blank
MW-[illegible]-080422	08/04/22	1320		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

The correct address for this property is 34450 Capitol.

240-171139 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Ski ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon St front yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E20361

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaris	Arcadis	08/04/22/1620	Arcadis Cold Storage	Arcadis	08/04/22/1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/5/22 1000	[signature]	EEGA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEGA	8/5/22 1030			

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Client Sample ID: TRIP BLANK_126
Lab Sample ID: 240-171139-1
Date Collected: 08/04/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/10/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/10/22 17:22*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/10/22 17:22*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/10/22 17:22*	*1*

Client Sample ID: MW-169S_080422
Lab Sample ID: 240-171139-2
Date Collected: 08/04/22 13:20
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 14:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/10/22 14:00*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/10/22 17:45*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/10/22 17:45*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/10/22 17:45*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/10/22 17:45*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171956-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/6/2022 8:01:25 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Certification Summary 16
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Job ID: 240-171956-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171956-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171956-1	TRIP BLANK_172	Water	08/19/22 00:00	08/23/22 09:30
240-171956-2	MW-168S_081922	Water	08/19/22 12:45	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Client Sample ID: TRIP BLANK_172 — Lab Sample ID: 240-171956-1

No Detections.

Client Sample ID: MW-168S_081922 — Lab Sample ID: 240-171956-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.45	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Client Sample ID: TRIP BLANK_172
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171956-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 12:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 12:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 12:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 12:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/26/22 12:12*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/26/22 12:12*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 12:12*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 12:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Client Sample ID: MW-168S_081922
Date Collected: 08/19/22 12:45
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171956-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 06:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/27/22 06:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 12:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 12:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 12:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:36	1
Vinyl chloride	**0.45**	**J**	1.0	0.45	ug/L			08/26/22 12:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 12:36*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 12:36*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/26/22 12:36*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/26/22 12:36*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171956-1	TRIP BLANK_172	90	97	97	99
240-171956-2	MW-168S_081922	93	101	98	101
240-171965-H-5 MS	Matrix Spike	91	107	102	102
240-171965-N-5 MSD	Matrix Spike Duplicate	88	105	101	98
LCS 240-540299/5	Lab Control Sample	88	104	99	98
MB 240-540299/8	Method Blank	90	97	97	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171956-2	MW-168S_081922	71
240-171965-G-5 MS	Matrix Spike	83
240-171965-M-5 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
MB 240-540396/4	Method Blank	71

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540299/8
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/26/22 11:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/26/22 11:48*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 11:48*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 11:48*	*1*

Lab Sample ID: LCS 240-540299/5
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.6		ug/L		93	63 - 134
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	77 - 123
Tetrachloroethene	20.0	20.3		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	19.1		ug/L		95	75 - 124
Trichloroethene	20.0	19.2		ug/L		96	70 - 122
Vinyl chloride	20.0	20.9		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-171965-H-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	56 - 136
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	19.5		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171965-H-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171965-N-5 MSD
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	19.9		ug/L		100	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 136	3	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	4	15
Vinyl chloride	1.0	U	20.0	20.7		ug/L		103	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.61		ug/L		96	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-G-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-M-5 MSD
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

GC/MS VOA

Analysis Batch: 540299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171956-1	TRIP BLANK_172	Total/NA	Water	8260D	
240-171956-2	MW-168S_081922	Total/NA	Water	8260D	
MB 240-540299/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540299/5	Lab Control Sample	Total/NA	Water	8260D	
240-171965-H-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-171965-N-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171956-2	MW-168S_081922	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171965-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Client Sample ID: TRIP BLANK_172

Lab Sample ID: 240-171956-1

Date Collected: 08/19/22 00:00

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 12:12

Client Sample ID: MW-168S_081922

Lab Sample ID: 240-171956-2

Date Collected: 08/19/22 12:45

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 12:36
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 06:19

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_172	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1685_081922	8/19/22	1245		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171956 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34480 Capitol St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/19/22 1350	NOVI COLD STORAGE	ARCADIS	8/19/22 1350
	ARCADIS	8/22/22 / 1120		Courier	8/22/22 / 1120
	Enviros	8/23/22		TETNC	8/23/22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? (Yes) No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171956-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-06
Initial Data Verification completed by CADENA: 2022-09-06
Number of Samples:2
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171956-1

		Sample Name:	TRIP BLANK_172				MW-168S_081922			
		Lab Sample ID:	2401719561				2401719562			
		Sample Date:	8/19/2022				8/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.45	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

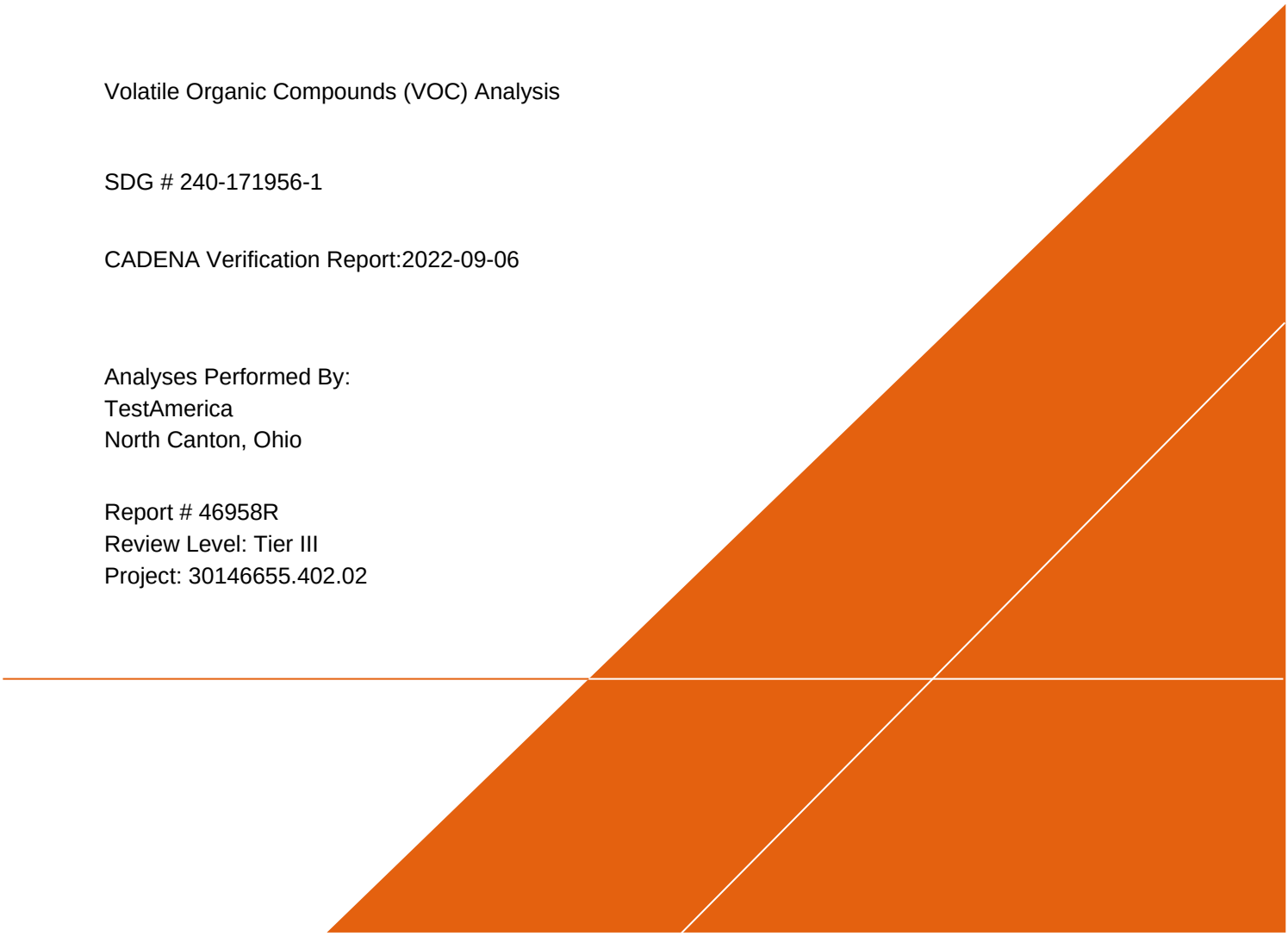
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171956-1

CADENA Verification Report:2022-09-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46958R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171956-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_172	240-171956-1	Water	08/19/22		X	
MW-168S_081922	240-171956-2	Water	08/19/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_172	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1685_081922	8/19/22	1245		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171956 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34480 Capitol St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/19/22 1350	NOVI COLD STORAGE	ARCADIS	8/19/22 1350
	ARCADIS	8/22/22 / 1120		Courier	8/22/22 / 1120
	Enviros	8/23/22		CET NC	8/23/22 9:30

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9/6/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Client Sample ID: TRIP BLANK_172
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171956-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 12:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 12:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 12:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 12:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/26/22 12:12*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/26/22 12:12*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 12:12*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 12:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171956-1

Client Sample ID: MW-168S_081922
Date Collected: 08/19/22 12:45
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171956-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 06:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/27/22 06:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 12:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 12:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 12:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 12:36	1
Vinyl chloride	**0.45**	**J**	1.0	0.45	ug/L			08/26/22 12:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 12:36*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 12:36*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/26/22 12:36*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/26/22 12:36*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171513-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:43:15 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171513-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171513-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method 8260D: No MS/MSD in batch 538924 due to an incorrect dilution: TRIP BLANK_131 (240-171513-1) and MW-152S_081022 (240-171513-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171513-1	TRIP BLANK_131	Water	08/10/22 00:00	08/13/22 09:45
240-171513-2	MW-152S_081022	Water	08/10/22 12:20	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Client Sample ID: TRIP BLANK_131 — Lab Sample ID: 240-171513-1

No Detections.

Client Sample ID: MW-152S_081022 — Lab Sample ID: 240-171513-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Client Sample ID: TRIP BLANK_131
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171513-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 17:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 17:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 17:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/15/22 17:28*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/15/22 17:28*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/15/22 17:28*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 17:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Client Sample ID: MW-152S_081022
Date Collected: 08/10/22 12:20
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171513-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 06:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/16/22 06:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 17:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 17:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 17:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/15/22 17:51*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 17:51*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 17:51*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/15/22 17:51*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171513-1	TRIP BLANK_131	110	103	101	102
240-171513-2	MW-152S_081022	110	104	102	101
LCS 240-538924/5	Lab Control Sample	108	107	105	105
MB 240-538924/8	Method Blank	109	104	102	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171412-J-2 MS	Matrix Spike	89
240-171412-P-2 MSD	Matrix Spike Duplicate	86
240-171513-2	MW-152S_081022	83
LCS 240-538971/3	Lab Control Sample	85
MB 240-538971/4	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538924/8
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/15/22 15:38*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 15:38*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 15:38*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 15:38*	*1*

Lab Sample ID: LCS 240-538924/5
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.1		ug/L		106	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	20.0		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538971/4
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/15/22 20:58*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538971/3
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.74		ug/L		97	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171412-J-2 MS
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171412-P-2 MSD
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	0	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

GC/MS VOA

Analysis Batch: 538924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171513-1	TRIP BLANK_131	Total/NA	Water	8260D	
240-171513-2	MW-152S_081022	Total/NA	Water	8260D	
MB 240-538924/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538924/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171513-2	MW-152S_081022	Total/NA	Water	8260D SIM	
MB 240-538971/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538971/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171412-J-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171412-P-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Client Sample ID: TRIP BLANK_131

Lab Sample ID: 240-171513-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 17:28

Client Sample ID: MW-152S_081022

Lab Sample ID: 240-171513-2

Date Collected: 08/10/22 12:20

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 17:51
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 06:14

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sikaria	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK [3]	8/10/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-152s_081022	8/10/22	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171513 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 3450 Beacon Back Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sikaria	Arcadis	08/10/22/1447	Arcadis Cold Stor.	Arcadis	08/10/22/1447
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/12/22 955	Jeri Hall	EETA	8/12/22 950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/12/22 958		EETNC	8-13-22 0945

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171513
Barberton Facility

Client Arcadis Site Name Livonia

Cooler Received on 8-13-22 Opened on 8-13-22

Cooler unpacked by: me

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	(Yes)	No
If yes, Questions 13-17 have been checked at the originating laboratory.	(me)	8-13-22
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171513-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171513-1

		Sample Name:	TRIP BLANK_131				MW-152S_081022			
		Lab Sample ID:	2401715131				2401715132			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171513-1

		Sample Name:	TRIP BLANK_131				MW-152S_081022			
		Lab Sample ID:	2401715131				2401715132			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

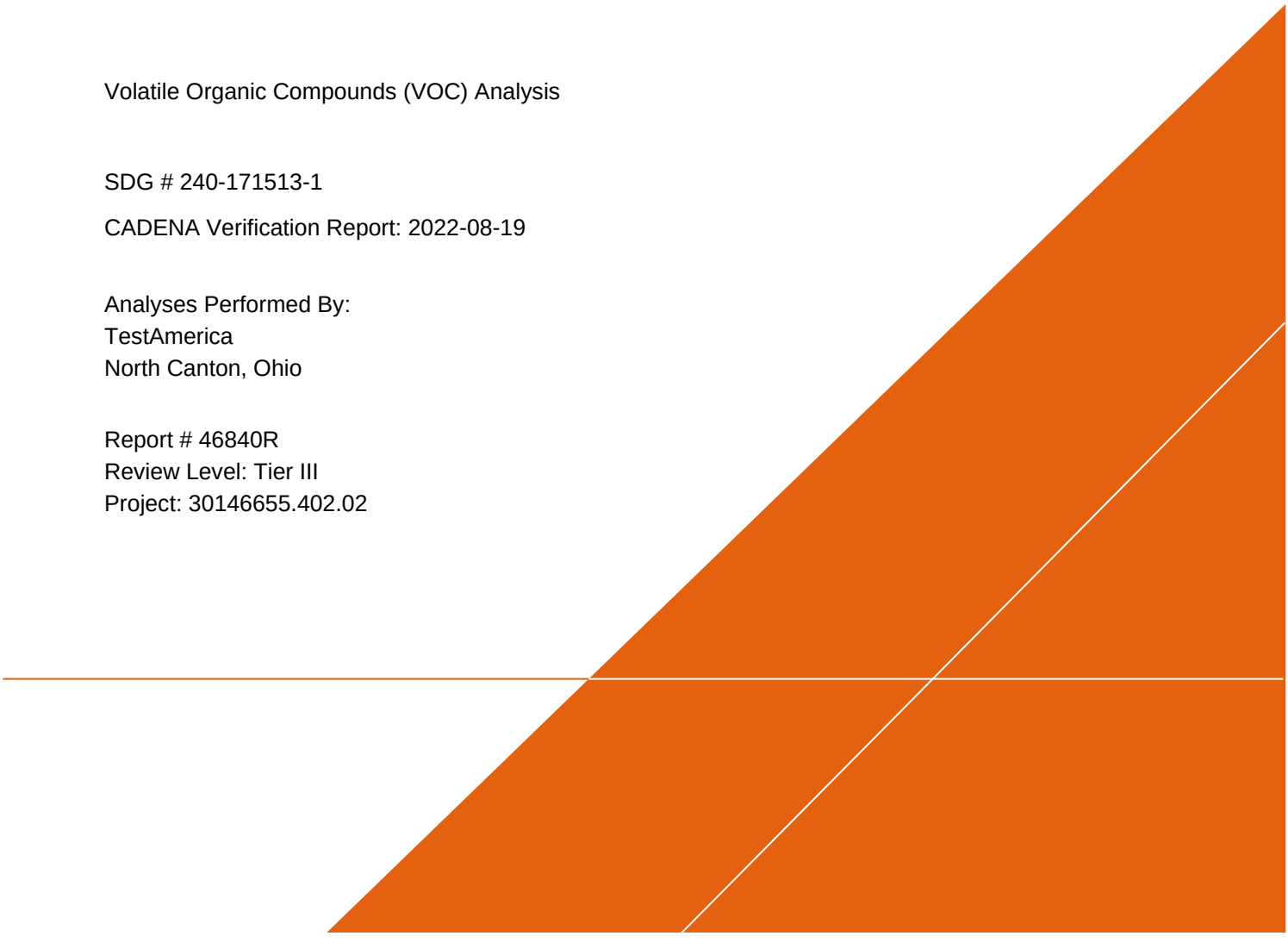
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171513-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46840R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171513-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_131	240-171513-1	Water	08/10/22		X	
MW-152S_081022	240-171513-2	Water	08/10/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 23, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sikoria	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK [3]	8/10/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-152s_081022	8/10/22	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171513 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 3450 Beacon Back Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sikoria	Arcadis	08/10/22/1447	Arcadis Cold Stor.	Arcadis	08/10/22/1447
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/12/22 955	Jeri Hall	EETA	8/12/22 950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/12/22 958	[signature]	EETNC	8-13-22 0945

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8/19/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Client Sample ID: TRIP BLANK_131
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171513-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 17:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 17:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 17:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/15/22 17:28*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/15/22 17:28*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/15/22 17:28*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 17:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171513-1

Client Sample ID: MW-152S_081022
Date Collected: 08/10/22 12:20
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171513-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 06:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/16/22 06:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 17:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 17:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 17:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 17:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/15/22 17:51*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 17:51*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 17:51*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/15/22 17:51*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171294-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/22/2022 4:34:14 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

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Have a Question? Ask The Expert

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171294-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171294-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171294-1	TRIP BLANK_86	Water	08/08/22 00:00	08/10/22 12:44
240-171294-2	MW-163S_080822	Water	08/08/22 14:00	08/10/22 12:44

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Client Sample ID: TRIP BLANK_86 — Lab Sample ID: 240-171294-1

No Detections.

Client Sample ID: MW-163S_080822 — Lab Sample ID: 240-171294-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Client Sample ID: TRIP BLANK_86

Date Collected: 08/08/22 00:00
Date Received: 08/10/22 12:44

Lab Sample ID: 240-171294-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 14:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 14:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 14:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 14:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 14:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 14:16*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/11/22 14:16*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 14:16*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/11/22 14:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Client Sample ID: MW-163S_080822
Date Collected: 08/08/22 14:00
Date Received: 08/10/22 12:44

Lab Sample ID: 240-171294-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 02:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/15/22 02:46*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/11/22 19:47*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/11/22 19:47*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 19:47*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/11/22 19:47*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171285-B-2 MS	Matrix Spike	90	95	101	96
240-171285-D-2 MSD	Matrix Spike Duplicate	92	98	100	97
240-171294-1	TRIP BLANK_86	95	92	98	99
240-171294-2	MW-163S_080822	91	86	94	95
LCS 240-538491/5	Lab Control Sample	89	92	100	95
MB 240-538491/8	Method Blank	95	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
240-171294-2	MW-163S_080822	87
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538491/8
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/11/22 13:03*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 13:03*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:03*	*1*

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.2		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	28.4		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	22.8		ug/L		91	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	22.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	27.8		ug/L		111	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171285-D-2 MSD
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136	1	15
Trichloroethene	1.0	U	25.0	23.5		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.7		ug/L		79	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

GC/MS VOA

Analysis Batch: 538491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171294-1	TRIP BLANK_86	Total/NA	Water	8260D	
240-171294-2	MW-163S_080822	Total/NA	Water	8260D	
MB 240-538491/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538491/5	Lab Control Sample	Total/NA	Water	8260D	
240-171285-B-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171285-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171294-2	MW-163S_080822	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Client Sample ID: TRIP BLANK_86

Lab Sample ID: 240-171294-1

Date Collected: 08/08/22 00:00

Matrix: Water

Date Received: 08/10/22 12:44

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 14:16

Client Sample ID: MW-163S_080822

Lab Sample ID: 240-171294-2

Date Collected: 08/08/22 14:00

Matrix: Water

Date Received: 08/10/22 12:44

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 19:47
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 02:46

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK 86	8/8/22	—		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-163S 080822	08/08/22	MDD		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171294 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Month

Special Instructions/QC Requirements & Comments:

Sample Address: 3459 Beech front yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/08/22/1650	Arcadis Cold Stor	Arcadis	08/08/22/1650
	Arcadis	8/9/22 1410	Jen Hall	EETA	8/9/22 1411
Jen Hall	EETA	8/9/22 1446	Mandaly Blue	EETA	8/10 22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # T4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [N] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171294-1
Sample date: 2022-08-08
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171294-1

		Sample Name:	TRIP BLANK_86				MW-163S_080822			
		Lab Sample ID:	2401712941				2401712942			
		Sample Date:	8/8/2022				8/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

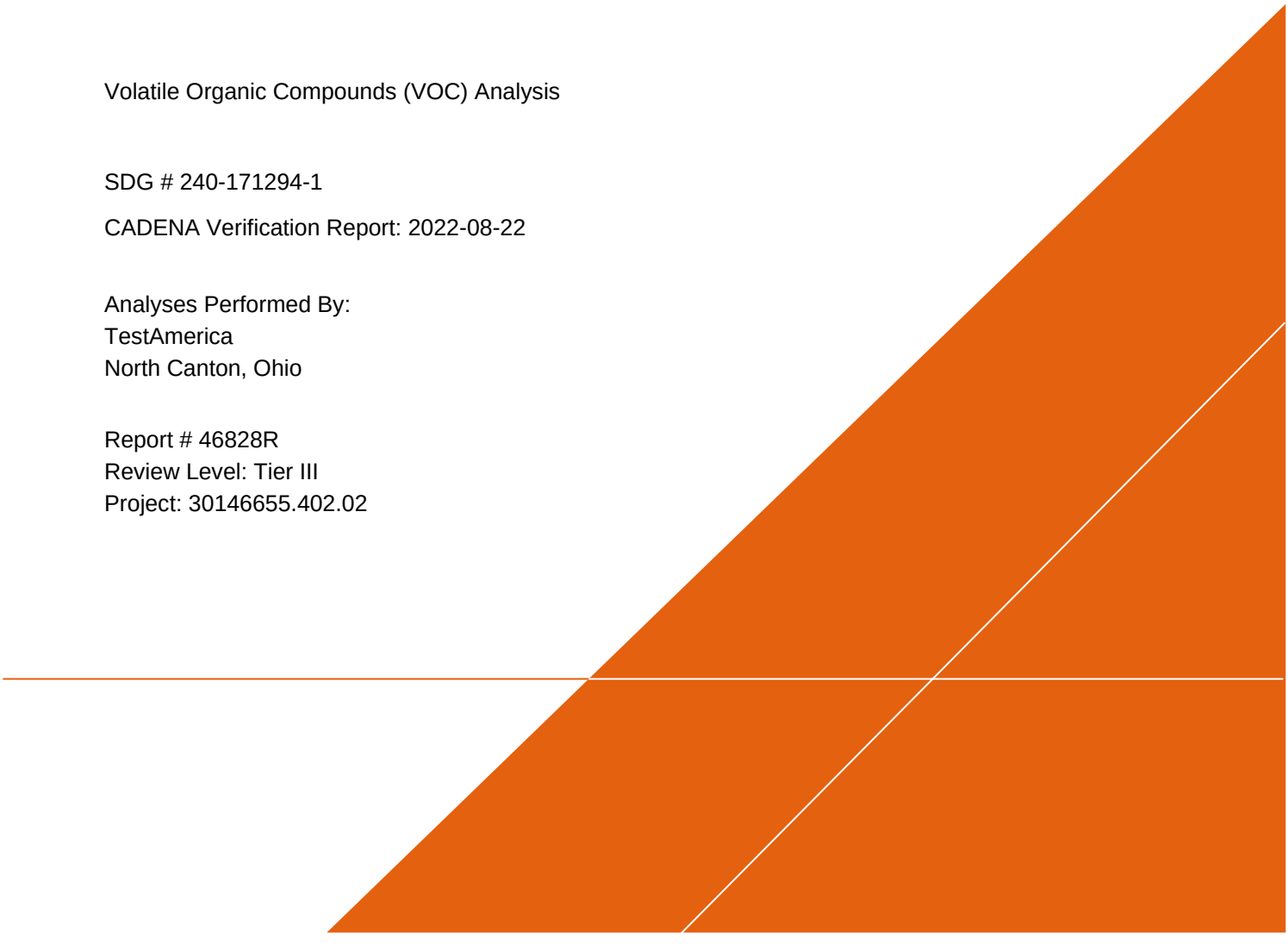
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171294-1

CADENA Verification Report: 2022-08-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46828R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171294-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_86	240-171294-1	Water	08/08/22		X	
MW-163S_080822	240-171294-2	Water	08/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK 86	8/8/22	—		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-163S 080822	08/08/22	MDD		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171294 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Month

Special Instructions/QC Requirements & Comments:
Sample Address: 3459 Beech front yard
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/08/22/1650	Arcadis Cold Stor	Arcadis	08/08/22/1650
	Arcadis	8/9/22 1410		EETA	8/9/22 1411
	EETA	8/9/22 1446	Mandaly Blue	EETA	8/10 22 9:30

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8/22/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Client Sample ID: TRIP BLANK_86

Date Collected: 08/08/22 00:00
Date Received: 08/10/22 12:44

Lab Sample ID: 240-171294-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 14:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 14:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 14:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 14:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 14:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 14:16*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/11/22 14:16*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 14:16*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/11/22 14:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171294-1

Client Sample ID: MW-163S_080822
Date Collected: 08/08/22 14:00
Date Received: 08/10/22 12:44

Lab Sample ID: 240-171294-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 02:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/15/22 02:46*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/11/22 19:47*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/11/22 19:47*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 19:47*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/11/22 19:47*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171302-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:38:03 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171302-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171302-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
Method 8260D: Surrogate recovery for the following samples were outside the upper control limit: TRIP BLANK_77 (240-171302-1) and MW-130S_080822 (240-171302-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171302-1	TRIP BLANK_77	Water	08/08/22 00:00	08/10/22 13:21
240-171302-2	MW-130S_080822	Water	08/08/22 12:00	08/10/22 13:21

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Client Sample ID: TRIP BLANK_77 — Lab Sample ID: 240-171302-1

No Detections.

Client Sample ID: MW-130S_080822 — Lab Sample ID: 240-171302-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Client Sample ID: TRIP BLANK_77
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:21

Lab Sample ID: 240-171302-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/11/22 20:40*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/11/22 20:40*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/11/22 20:40*	*1*
Dibromofluoromethane (Surr)	*121*	*S1+*	*73 - 120*		*08/11/22 20:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Client Sample ID: MW-130S_080822
Date Collected: 08/08/22 12:00
Date Received: 08/10/22 13:21

Lab Sample ID: 240-171302-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 05:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/13/22 05:35*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 21:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 21:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 21:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:04	1
Vinyl chloride	**2.1**		1.0	0.45	ug/L			08/16/22 12:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*08/11/22 21:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/16/22 12:54*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/11/22 21:04*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/16/22 12:54*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/11/22 21:04*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/16/22 12:54*	*1*
Dibromofluoromethane (Surr)	*121*	*S1+*	*73 - 120*		*08/11/22 21:04*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/16/22 12:54*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171299-B-3 MSD	Matrix Spike Duplicate	96	116	115	99
240-171299-E-3 MS	Matrix Spike	99	117	118	103
240-171302-1	TRIP BLANK_77	114	102	109	121 S1+
240-171302-2	MW-130S_080822	118	102	108	121 S1+
240-171302-2	MW-130S_080822	99	89	101	101
240-171504-B-25 MS	Matrix Spike	101	95	103	103
240-171504-B-25 MSD	Matrix Spike Duplicate	99	95	102	102
LCS 240-538478/5	Lab Control Sample	95	119	117	101
LCS 240-539012/5	Lab Control Sample	100	94	101	102
MB 240-538478/8	Method Blank	110	105	110	116
MB 240-539012/8	Method Blank	98	88	98	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171299-I-3 MS	Matrix Spike	91
240-171299-O-3 MSD	Matrix Spike Duplicate	90
240-171302-2	MW-130S_080822	87
LCS 240-538760/3	Lab Control Sample	89
MB 240-538760/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538478/8
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 13:02*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 13:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 13:02*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 13:02*	*1*

Lab Sample ID: LCS 240-538478/5
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.8		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	21.8		ug/L		109	76 - 123
trans-1,2-Dichloroethene	20.0	20.5		ug/L		103	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*119*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-171299-E-3 MS
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	17.1		ug/L		86	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		62 - 137
4-Bromofluorobenzene (Surr)	117		56 - 136
Toluene-d8 (Surr)	118		78 - 122
Dibromofluoromethane (Surr)	103		73 - 120

Lab Sample ID: MB 240-539012/8
Matrix: Water
Analysis Batch: 539012

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 12:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 12:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 12:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 12:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 12:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 12:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		62 - 137		08/16/22 12:05	1
4-Bromofluorobenzene (Surr)	88		56 - 136		08/16/22 12:05	1
Toluene-d8 (Surr)	98		78 - 122		08/16/22 12:05	1
Dibromofluoromethane (Surr)	98		73 - 120		08/16/22 12:05	1

Lab Sample ID: LCS 240-539012/5
Matrix: Water
Analysis Batch: 539012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.9		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	21.8		ug/L		109	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	21.1		ug/L		105	75 - 124
Trichloroethene	20.0	21.1		ug/L		106	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-539012/5
Matrix: Water
Analysis Batch: 539012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	19.9		ug/L		99	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171504-B-25 MS
Matrix: Water
Analysis Batch: 539012

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	3.3	J	100	97.0		ug/L		94	56 - 135		
cis-1,2-Dichloroethene	110		100	195		ug/L		86	66 - 128		
Tetrachloroethene	5.0	U	100	80.9		ug/L		81	62 - 131		
trans-1,2-Dichloroethene	7.7		100	97.5		ug/L		90	56 - 136		
Trichloroethene	5.0	U	100	91.8		ug/L		92	61 - 124		
Vinyl chloride	11		100	98.5		ug/L		87	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171504-B-25 MSD
Matrix: Water
Analysis Batch: 539012

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	3.3	J	100	85.9		ug/L		83	56 - 135	12	26
cis-1,2-Dichloroethene	110		100	179		ug/L		70	66 - 128	9	14
Tetrachloroethene	5.0	U	100	71.3		ug/L		71	62 - 131	13	20
trans-1,2-Dichloroethene	7.7		100	89.1		ug/L		81	56 - 136	9	15
Trichloroethene	5.0	U	100	81.1		ug/L		81	61 - 124	12	15
Vinyl chloride	11		100	88.9		ug/L		78	43 - 157	10	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538760/4
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 21:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 21:10*	*1*

Lab Sample ID: LCS 240-538760/3
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.0		ug/L		100	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171299-I-3 MS
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.99		ug/L		100	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171299-O-3 MSD
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.83		ug/L		98	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

GC/MS VOA

Analysis Batch: 538478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171302-1	TRIP BLANK_77	Total/NA	Water	8260D	
240-171302-2	MW-130S_080822	Total/NA	Water	8260D	
MB 240-538478/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538478/5	Lab Control Sample	Total/NA	Water	8260D	
240-171299-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171299-E-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 538760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171302-2	MW-130S_080822	Total/NA	Water	8260D SIM	
MB 240-538760/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538760/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171299-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171299-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 539012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171302-2	MW-130S_080822	Total/NA	Water	8260D	
MB 240-539012/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539012/5	Lab Control Sample	Total/NA	Water	8260D	
240-171504-B-25 MS	Matrix Spike	Total/NA	Water	8260D	
240-171504-B-25 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Client Sample ID: TRIP BLANK_77

Lab Sample ID: 240-171302-1

Date Collected: 08/08/22 00:00

Matrix: Water

Date Received: 08/10/22 13:21

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 20:40

Client Sample ID: MW-130S_080822

Lab Sample ID: 240-171302-2

Date Collected: 08/08/22 12:00

Matrix: Water

Date Received: 08/10/22 13:21

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 21:04
Total/NA	Analysis	8260D		1	539012	HMB	EET CAN	08/16/22 12:54
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 05:35

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_77	8/8/22	—		2						2					N	G	X	X	X	X	X	X		1 Trip Blank
MW-19_080822	08/08/22	1700		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171302 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 m): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: 34600 Beacon side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/08/22/1650	Arcadis Cold Stor	Arcadis	08/08/22/1650
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/9/22 1410	[signature]	EEA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEA	8/9/22 1446	[signature]	TAL	8-10-22 9:30

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # T4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No	
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No	NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)	
-Were tamper/custody seals intact and uncompromised?	(Yes)	No	NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No	
4. Did custody papers accompany the sample(s)?	(Yes)	No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?			
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No	
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No	
12. Are these work share samples and all listed on the COC?	Yes	(No)	
If yes, Questions 13-17 have been checked at the originating laboratory.			
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171302-1
Sample date: 2022-08-08
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC samples -001 and -002 surrogate recovery outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171302-1

		Sample Name:	TRIP BLANK_77				MW-130S_080822			
		Lab Sample ID:	2401713021				2401713022			
		Sample Date:	8/8/2022				8/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	2.1	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

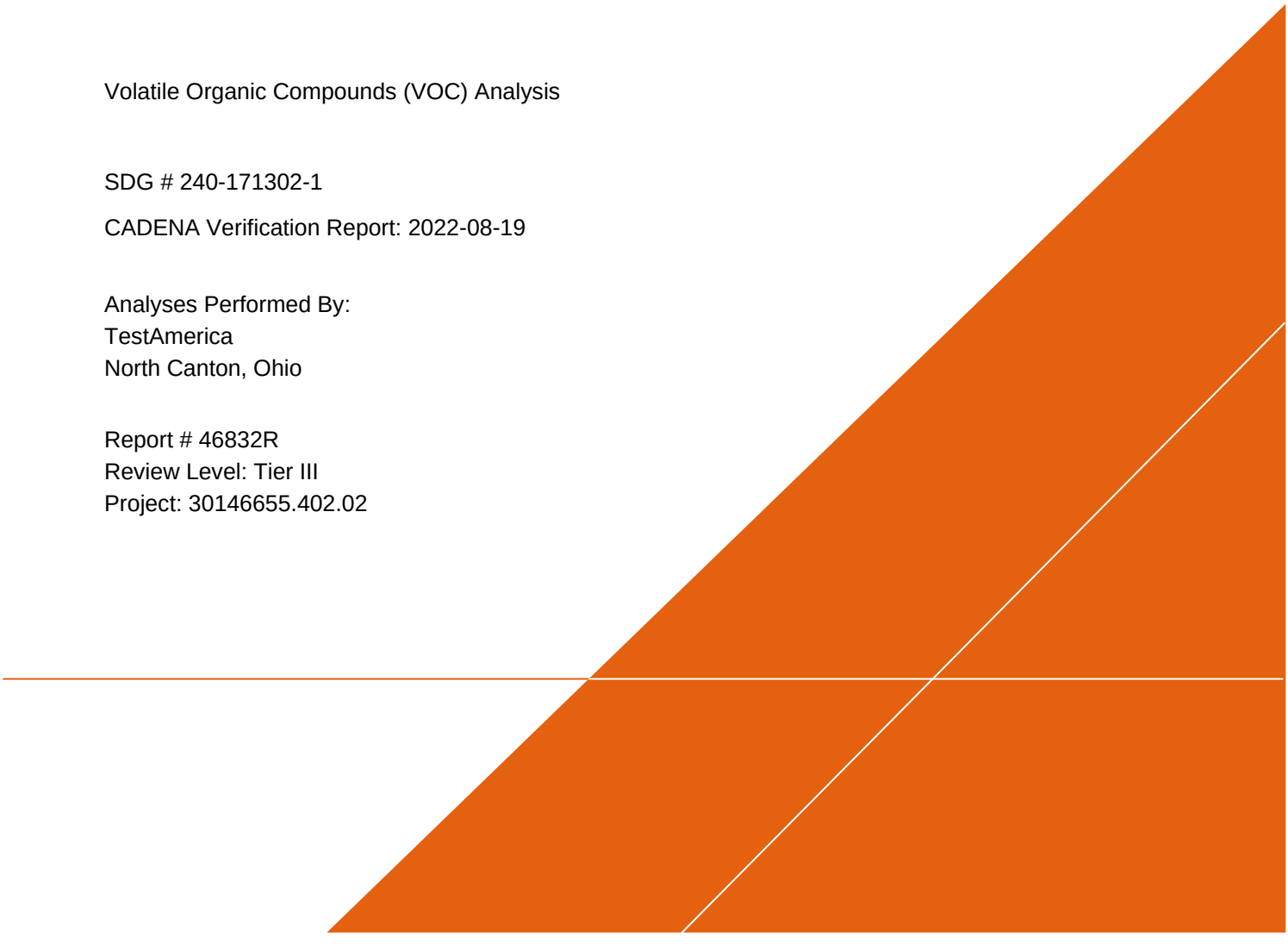
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171302-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46832R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171302-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_77	240-171302-1	Water	08/08/22		X	
MW-130S_080822	240-171302-2	Water	08/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_77	8/8/22	—		2						2					N	G	X	X	X	X	X	X		1 Trip Blank
MW-19_080822	08/08/22	1700		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171302 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 m): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: 34600 Beacon side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/08/22/1650	Arcadis Cold Stor	Arcadis	08/08/22/1650
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/9/22 1410	[signature]	EEA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEA	8/9/22 1446	[signature]	TAL	8-10-22 9:30

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8/19/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Client Sample ID: TRIP BLANK_77
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:21

Lab Sample ID: 240-171302-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/11/22 20:40*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/11/22 20:40*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/11/22 20:40*	*1*
Dibromofluoromethane (Surr)	*121*	*S1+*	*73 - 120*		*08/11/22 20:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171302-1

Client Sample ID: MW-130S_080822
Date Collected: 08/08/22 12:00
Date Received: 08/10/22 13:21

Lab Sample ID: 240-171302-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 05:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/13/22 05:35*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 21:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 21:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 21:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:04	1
Vinyl chloride	**2.1**		1.0	0.45	ug/L			08/16/22 12:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*08/11/22 21:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/16/22 12:54*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/11/22 21:04*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/16/22 12:54*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/11/22 21:04*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/16/22 12:54*	*1*
Dibromofluoromethane (Surr)	*121*	*S1+*	*73 - 120*		*08/11/22 21:04*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/16/22 12:54*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171149-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:28:29 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Job ID: 240-171149-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171149-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-164S_080422 (240-171149-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171149-1	TRIP BLANK_54	Water	08/04/22 00:00	08/06/22 10:00
240-171149-2	MW-164S_080422	Water	08/04/22 11:28	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Client Sample ID: TRIP BLANK_54 — Lab Sample ID: 240-171149-1

No Detections.

Client Sample ID: MW-164S_080422 — Lab Sample ID: 240-171149-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Client Sample ID: TRIP BLANK_54
Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171149-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/10/22 16:37*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 16:37*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 16:37*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/10/22 16:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Client Sample ID: MW-164S_080422
Date Collected: 08/04/22 11:28
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171149-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/10/22 18:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 20:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 20:57*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 20:57*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/10/22 20:57*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 20:57*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171149-1	TRIP BLANK_54	103	97	104	109
240-171149-2	MW-164S_080422	105	97	105	110
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171149-2	MW-164S_080422	77
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171149-2	MW-164S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171149-1	TRIP BLANK_54	Total/NA	Water	8260D	
240-171149-2	MW-164S_080422	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Client Sample ID: TRIP BLANK_54

Lab Sample ID: 240-171149-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 16:37

Client Sample ID: MW-164S_080422

Lab Sample ID: 240-171149-2

Date Collected: 08/04/22 11:28

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 20:57
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 18:11

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_54	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1645_080422	8/4/22	1128		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171149 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34637 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/4/22 1510	Novi Cold Storage	Arcadis	8/4/22 1510
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000		EET	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EET	8/5/22 1030			

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171149
Barberton Facility

Client Arcadis Site Name Ford LTP | Cooler unpacked by: JMR

Cooler Received on 8-6-22 Opened on 8-6-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171149

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171149-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171149-1

		Sample Name:	TRIP BLANK_54				MW-164S_080422			
		Lab Sample ID:	2401711491				2401711492			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

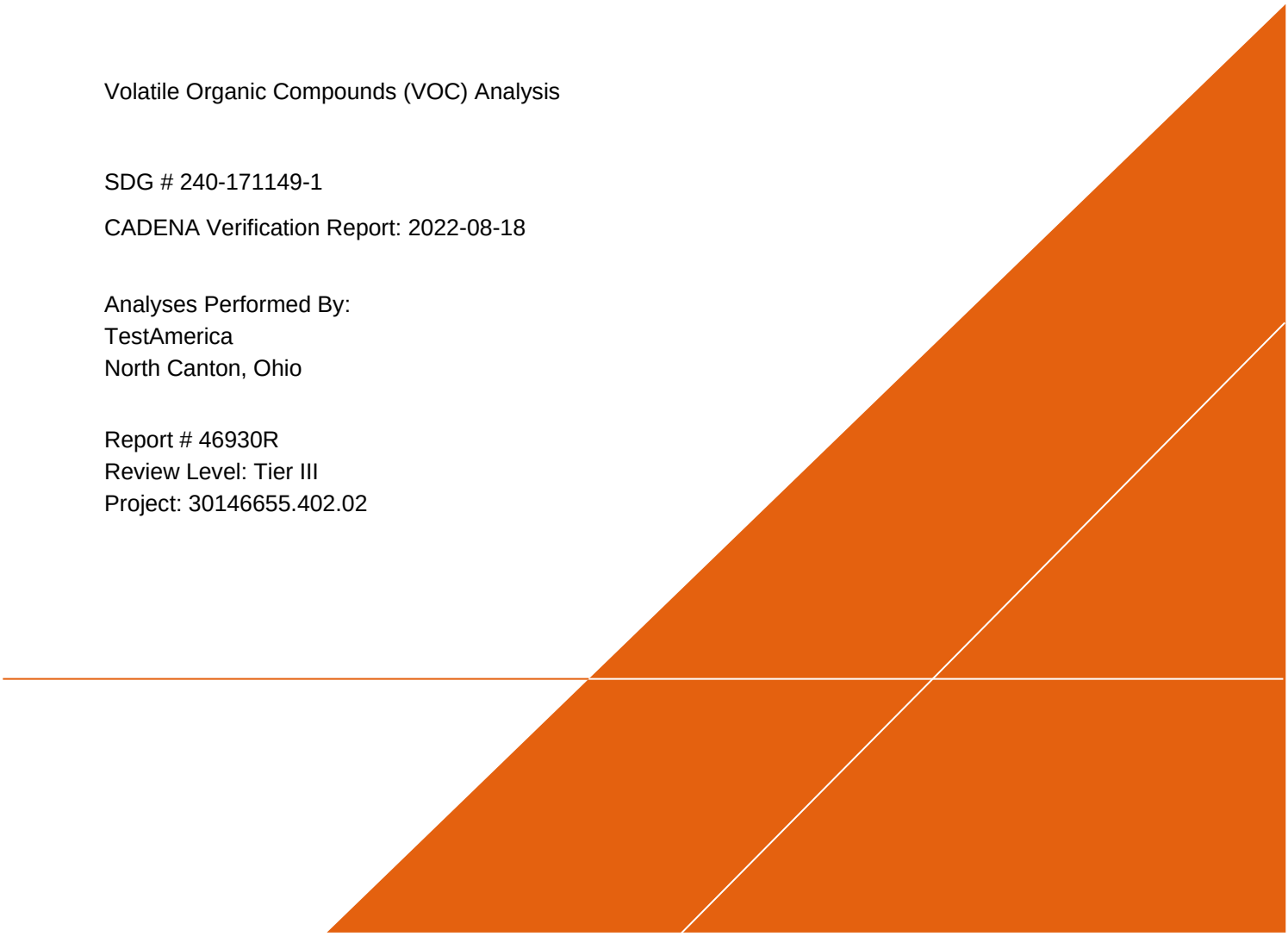
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171149-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46930R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171149-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_54	240-171149-1	Water	08/04/22		X	
MW-164S_080422	240-171149-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 21, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_54	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1645_080422	8/4/22	1128		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171149 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34637 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/4/22 1510	Novi Cold Storage	Arcadis	8/4/22 1510
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000		EE Tat	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EE Tat	8/5/22 1030			

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Client Sample ID: TRIP BLANK_54
Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171149-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/10/22 16:37*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 16:37*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 16:37*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/10/22 16:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171149-1

Client Sample ID: MW-164S_080422
Date Collected: 08/04/22 11:28
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171149-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/10/22 18:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 20:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 20:57*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 20:57*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/10/22 20:57*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 20:57*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171290-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/22/2022 4:21:07 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

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Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Job ID: 240-171290-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171290-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171290-1	TRIP BLANK_71	Water	08/08/22 00:00	08/10/22 12:26
240-171290-2	MW-153S_080822	Water	08/08/22 10:40	08/10/22 12:26

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Client Sample ID: TRIP BLANK_71 — Lab Sample ID: 240-171290-1

No Detections.

Client Sample ID: MW-153S_080822 — Lab Sample ID: 240-171290-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Client Sample ID: TRIP BLANK_71

Date Collected: 08/08/22 00:00
Date Received: 08/10/22 12:26

Lab Sample ID: 240-171290-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/11/22 13:28*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/11/22 13:28*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/11/22 13:28*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Client Sample ID: MW-153S_080822
Date Collected: 08/08/22 10:40
Date Received: 08/10/22 12:26

Lab Sample ID: 240-171290-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 01:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 01:55*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/11/22 18:13*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/11/22 18:13*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/11/22 18:13*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 18:13*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171285-B-2 MS	Matrix Spike	90	95	101	96
240-171285-D-2 MSD	Matrix Spike Duplicate	92	98	100	97
240-171290-1	TRIP BLANK_71	96	92	100	100
240-171290-2	MW-153S_080822	97	93	100	100
LCS 240-538491/5	Lab Control Sample	89	92	100	95
MB 240-538491/8	Method Blank	95	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
240-171290-2	MW-153S_080822	88
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538491/8
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/11/22 13:03*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 13:03*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:03*	*1*

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.2		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	28.4		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	22.8		ug/L		91	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	22.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	27.8		ug/L		111	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171285-D-2 MSD
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136	1	15
Trichloroethene	1.0	U	25.0	23.5		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.7		ug/L		79	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

GC/MS VOA

Analysis Batch: 538491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171290-1	TRIP BLANK_71	Total/NA	Water	8260D	
240-171290-2	MW-153S_080822	Total/NA	Water	8260D	
MB 240-538491/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538491/5	Lab Control Sample	Total/NA	Water	8260D	
240-171285-B-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171285-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171290-2	MW-153S_080822	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Client Sample ID: TRIP BLANK_71

Lab Sample ID: 240-171290-1

Date Collected: 08/08/22 00:00

Matrix: Water

Date Received: 08/10/22 12:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 13:28

Client Sample ID: MW-153S_080822

Lab Sample ID: 240-171290-2

Date Collected: 08/08/22 10:40

Matrix: Water

Date Received: 08/10/22 12:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 18:13
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 01:55

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171290-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_71	8/3/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-153c_080822	08/08/22	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171290 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 3464 Beacon front yard
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203681
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/08/22/1650	Arcadis cold stor	Arcadis	08/08/22 1650
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/9/22 1410		EEA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	8/9/22 1446	Mandaly Blr	eem	8-10-22 9:30

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8/22/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # IA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171290-1
Sample date: 2022-08-08
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171290-1

		Sample Name:	TRIP BLANK_71				MW-153S_080822			
		Lab Sample ID:	2401712901				2401712902			
		Sample Date:	8/8/2022				8/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

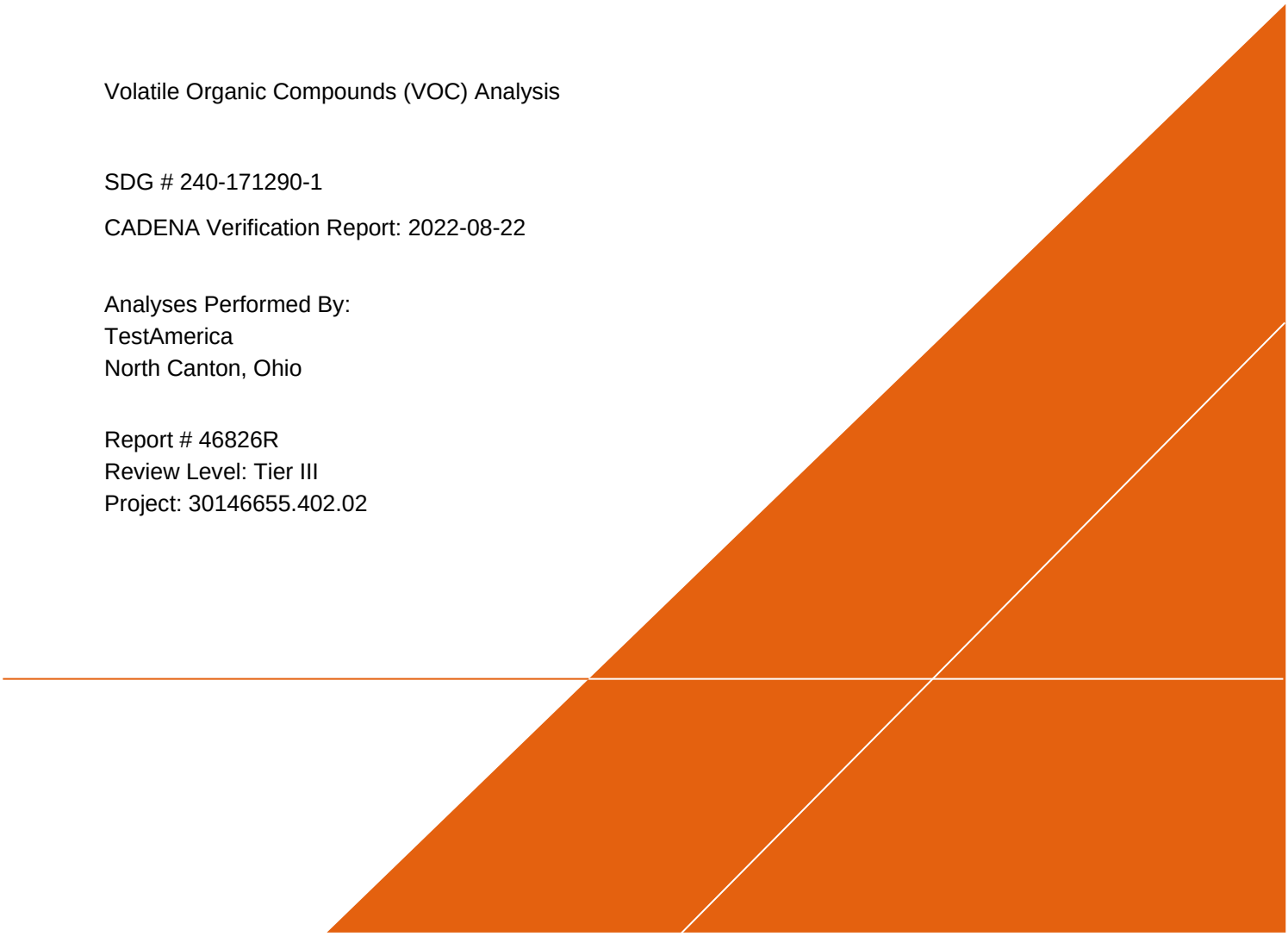
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171290-1

CADENA Verification Report: 2022-08-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46826R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171290-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_71	240-171290-1	Water	08/08/22		X	
MW-153S_080822	240-171290-2	Water	08/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 20, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 20, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_71	8/8/22	—		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-153_080822	08/08/22	1040		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171290 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 3464 Beacon plant yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E20363 1

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/08/22 1650	Arcadis cold star	Arcadis	08/08/22 1650
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/9/22 1410		EETA	8/9/22 1411
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/9/22 1446		EETA	8-10-22 9:30

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08/22/2022

Client Sample ID: TRIP BLANK_71
Lab Sample ID: 240-171290-1
Date Collected: 08/08/22 00:00
Matrix: Water
Date Received: 08/10/22 12:26

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/11/22 13:28*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/11/22 13:28*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/11/22 13:28*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:28*	*1*

Client Sample ID: MW-153S_080822
Lab Sample ID: 240-171290-2
Date Collected: 08/08/22 10:40
Matrix: Water
Date Received: 08/10/22 12:26

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 01:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 01:55*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/11/22 18:13*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/11/22 18:13*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/11/22 18:13*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 18:13*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171146-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:20:59 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Job ID: 240-171146-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171146-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-165S_080422 (240-171146-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171146-1	TRIP BLANK_46	Water	08/04/22 00:00	08/06/22 10:00
240-171146-2	MW-165S_080422	Water	08/04/22 09:55	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Client Sample ID: TRIP BLANK_46 — Lab Sample ID: 240-171146-1

No Detections.

Client Sample ID: MW-165S_080422 — Lab Sample ID: 240-171146-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Client Sample ID: TRIP BLANK_46

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171146-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 15:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 15:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 15:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 15:26*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 15:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 15:26*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 15:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Client Sample ID: MW-165S_080422
Date Collected: 08/04/22 09:55
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171146-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/10/22 16:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 19:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 19:46*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 19:46*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/10/22 19:46*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 19:46*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171146-1	TRIP BLANK_46	104	97	104	110
240-171146-2	MW-165S_080422	105	97	105	110
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171146-2	MW-165S_080422	81
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171146-2	MW-165S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171146-1	TRIP BLANK_46	Total/NA	Water	8260D	
240-171146-2	MW-165S_080422	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Client Sample ID: TRIP BLANK_46

Lab Sample ID: 240-171146-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 15:26

Client Sample ID: MW-165S_080422

Lab Sample ID: 240-171146-2

Date Collected: 08/04/22 09:55

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 19:46
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 16:59

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_46	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1655_080422	8/4/22	0955		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171146 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34669 Beacon
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company:	Date/Time:		Company:	Date/Time:
Relinquished by: Sommer Guy	Arcadis	8/4/22 1510	Received by: Novi Cold Storage	Arcadis	8/4/22 1510
Relinquished by:	Arcadis	8/5/22 1000	Received by:	EET	8/5/22 1000
Relinquished by:	EET	8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171146
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420 (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171146

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171146-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171146-1

		Sample Name:	TRIP BLANK_46				MW-165S_080422			
		Lab Sample ID:	2401711461				2401711462			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

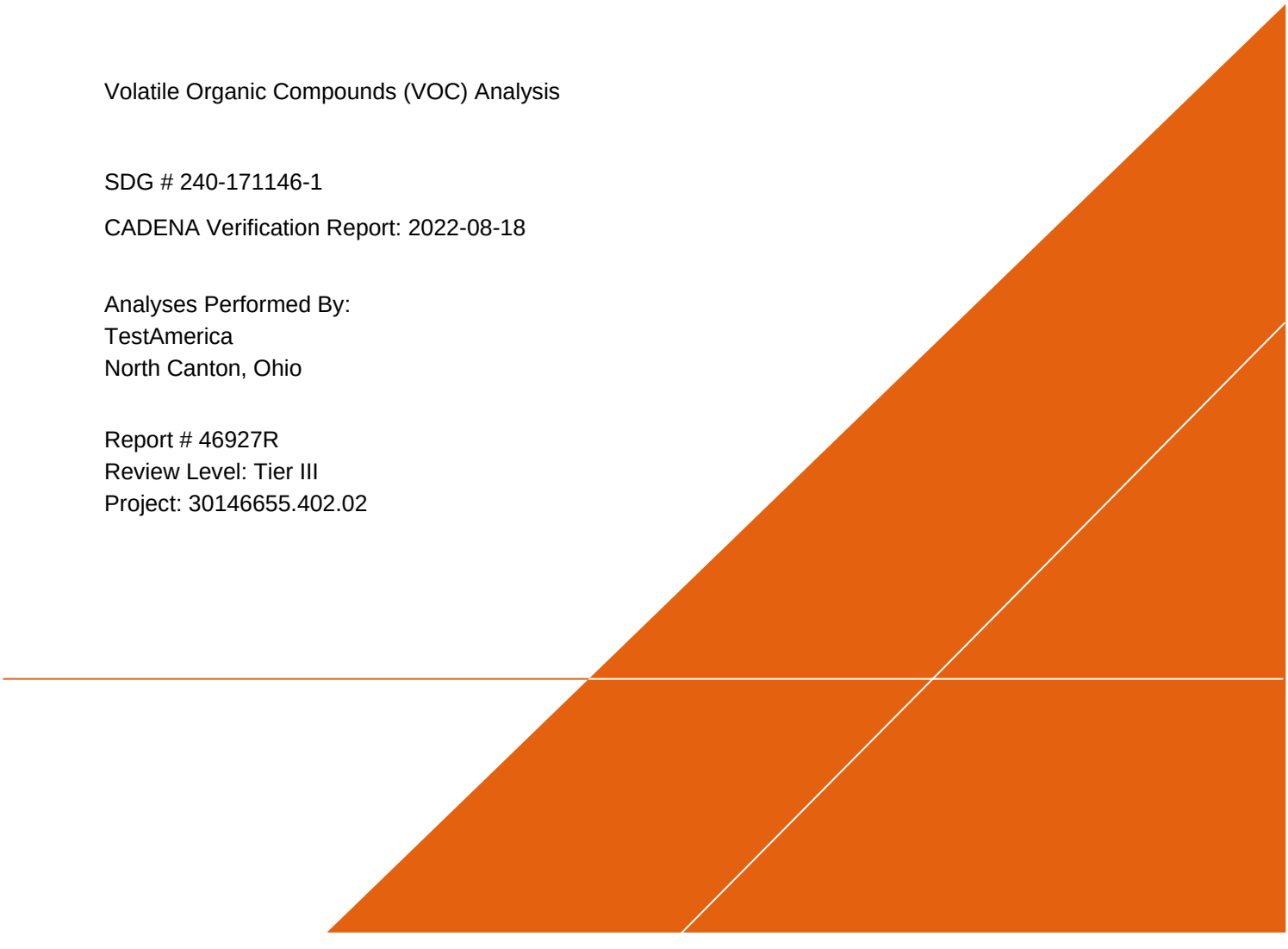
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171146-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46927R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171146-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_46	240-171146-1	Water	08/04/22		X	
MW-165S_080422	240-171146-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 21, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_46	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1655_080422	8/4/22	0955		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171146 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34669 Beacon
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 8/4/22 1510	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 8/4/22 1510
Relinquished by: [signature]	Company: Arcadis	Date/Time: 8/5/22 1000	Received by: [signature]	Company: EETA	Date/Time: 8/5/22 1000
Relinquished by: [signature]	Company: EETA	Date/Time: 8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Client Sample ID: TRIP BLANK_46

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171146-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 15:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 15:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 15:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 15:26*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 15:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 15:26*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 15:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171146-1

Client Sample ID: MW-165S_080422
Date Collected: 08/04/22 09:55
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171146-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/10/22 16:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 19:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 19:46*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 19:46*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/10/22 19:46*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/10/22 19:46*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171150-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:28:57 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Job ID: 240-171150-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171150-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171150-1	TRIP BLANK_53	Water	08/04/22 00:00	08/06/22 10:00
240-171150-2	MW-154S_080422	Water	08/04/22 12:35	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Client Sample ID: TRIP BLANK_53 — Lab Sample ID: 240-171150-1

No Detections.

Client Sample ID: MW-154S_080422 — Lab Sample ID: 240-171150-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Client Sample ID: TRIP BLANK_53
Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171150-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 16:57*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 16:57*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 16:57*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 16:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Client Sample ID: MW-154S_080422
Date Collected: 08/04/22 12:35
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171150-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 00:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/12/22 00:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 19:27*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 19:27*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 19:27*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/10/22 19:27*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-28 MS	Matrix Spike	83	99	96	87
240-171141-B-28 MSD	Matrix Spike Duplicate	81	95	92	87
240-171150-1	TRIP BLANK_53	89	88	92	89
240-171150-2	MW-154S_080422	89	89	91	88
LCS 240-538361/4	Lab Control Sample	85	95	95	88
MB 240-538361/6	Method Blank	88	88	91	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171150-2	MW-154S_080422	88
240-171154-D-2 MS	Matrix Spike	91
240-171154-D-2 MSD	Matrix Spike Duplicate	94
LCS 240-538564/3	Lab Control Sample	93
MB 240-538564/4	Method Blank	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538361/6
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/10/22 16:07*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 16:07*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 16:07*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 16:07*	*1*

Lab Sample ID: LCS 240-538361/4
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.5		ug/L		90	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.5		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.5		ug/L		90	75 - 124
Trichloroethene	25.0	22.4		ug/L		89	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171141-B-28 MS
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	3.3	U	83.3	73.8		ug/L		89	56 - 135
cis-1,2-Dichloroethene	78		83.3	141		ug/L		76	66 - 128
Tetrachloroethene	2.1	J	83.3	71.1		ug/L		83	62 - 131
trans-1,2-Dichloroethene	3.3	U	83.3	72.8		ug/L		87	56 - 136
Trichloroethene	6.3		83.3	72.3		ug/L		79	61 - 124
Vinyl chloride	3.3	U	41.7	36.5		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-28 MS
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	87		73 - 120

Lab Sample ID: 240-171141-B-28 MSD
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	3.3	U	83.3	73.6		ug/L		88	56 - 135	0	26
cis-1,2-Dichloroethene	78		83.3	143		ug/L		78	66 - 128	1	14
Tetrachloroethene	2.1	J	83.3	68.9		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	3.3	U	83.3	72.2		ug/L		87	56 - 136	1	15
Trichloroethene	6.3		83.3	72.4		ug/L		79	61 - 124	0	15
Vinyl chloride	3.3	U	41.7	36.6		ug/L		88	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	92		78 - 122
Dibromofluoromethane (Surr)	87		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538564/4
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/11/22 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120		08/11/22 20:13	1

Lab Sample ID: LCS 240-538564/3
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		66 - 120

Lab Sample ID: 240-171154-D-2 MS
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	61		10.0	75.2	4	ug/L		139	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171154-D-2 MSD
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	61		10.0	74.6	4	ug/L		133	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

GC/MS VOA

Analysis Batch: 538361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171150-1	TRIP BLANK_53	Total/NA	Water	8260D	
240-171150-2	MW-154S_080422	Total/NA	Water	8260D	
MB 240-538361/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538361/4	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-28 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-28 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171150-2	MW-154S_080422	Total/NA	Water	8260D SIM	
MB 240-538564/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538564/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171154-D-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171154-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Client Sample ID: TRIP BLANK_53

Lab Sample ID: 240-171150-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 16:57

Client Sample ID: MW-154S_080422

Lab Sample ID: 240-171150-2

Date Collected: 08/04/22 12:35

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 19:27
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 00:51

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_53	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-154S_080422	8/4/22	1235		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171150 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34682 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/4/22 1510	Novi Cold Storage	Arcadis	8/4/22 1510
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/5/22 1000	[signature]	EET	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EET	8/5/22 1030			

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171150**
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler unpacked by: JMR

Cooler Received on 8-6-22 Opened on 8-6-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171150

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171150-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171150-1

		Sample Name:	TRIP BLANK_53				MW-154S_080422			
		Lab Sample ID:	2401711501				2401711502			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

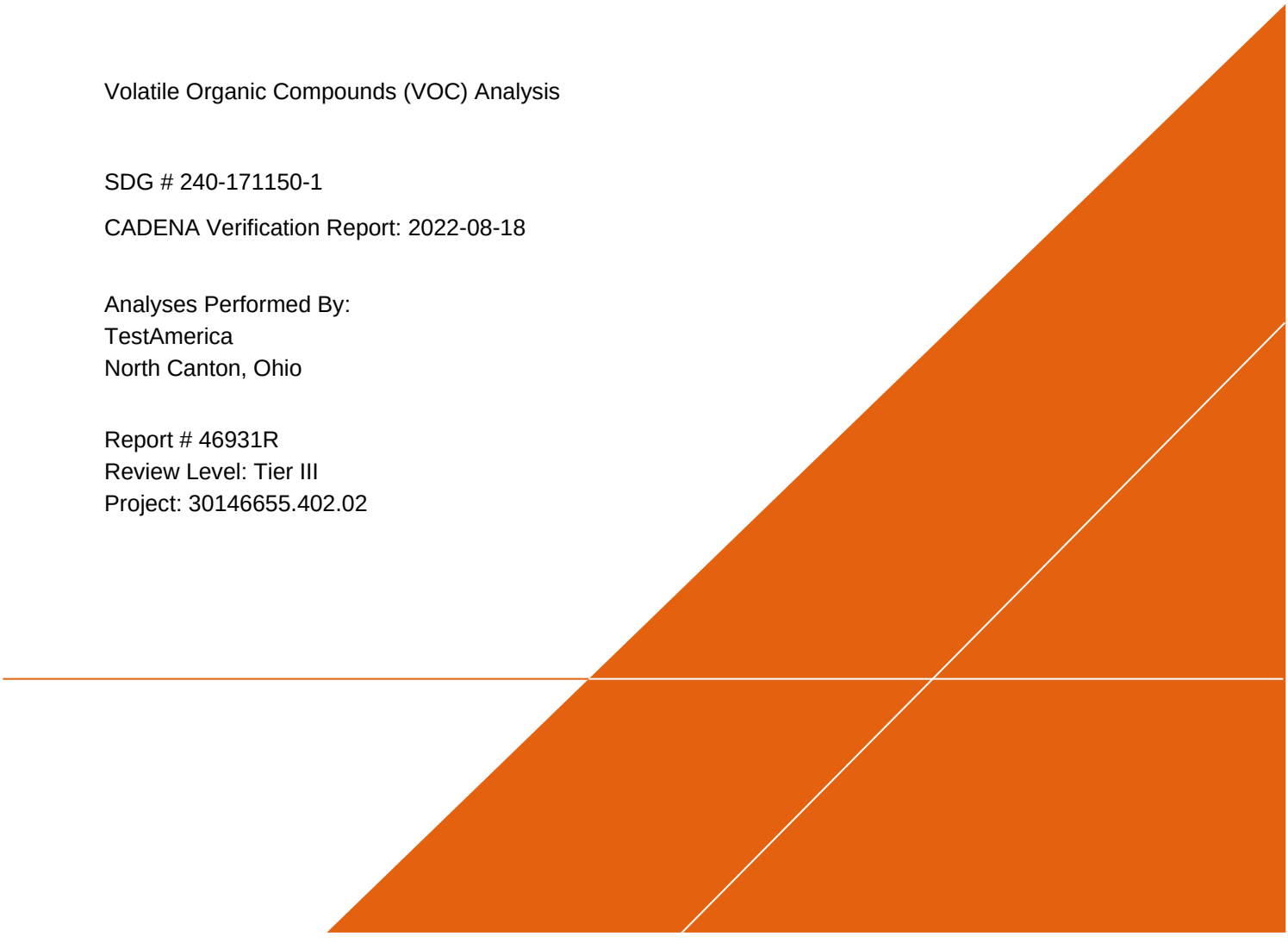
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171150-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46931R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171150-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_53	240-171150-1	Water	08/04/22		X	
MW-154S_080422	240-171150-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 21, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_53	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-154S_080422	8/4/22	1235		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171150 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34682 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/4/22 1510	Novi Cold Storage	Arcadis	8/4/22 1510
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/5/22 1000	[signature]	EET	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EET	8/5/22 1030			

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Client Sample ID: TRIP BLANK_53
Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171150-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 16:57*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 16:57*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 16:57*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 16:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171150-1

Client Sample ID: MW-154S_080422
Date Collected: 08/04/22 12:35
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171150-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 00:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/12/22 00:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 19:27*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 19:27*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 19:27*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/10/22 19:27*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170977-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/18/2022 8:12:24 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Job ID: 240-170977-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170977-1

Comments
No additional comments.

Receipt
The samples were received on 8/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4° C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170977-1	TRIP BLANK_41	Water	08/02/22 00:00	08/04/22 09:40
240-170977-2	MW-182S_080222	Water	08/02/22 11:05	08/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Client Sample ID: TRIP BLANK_41 — Lab Sample ID: 240-170977-1

No Detections.

Client Sample ID: MW-182S_080222 — Lab Sample ID: 240-170977-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Client Sample ID: TRIP BLANK_41
Date Collected: 08/02/22 00:00
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170977-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 14:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 14:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/08/22 14:40*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/08/22 14:40*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 14:40*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 14:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Client Sample ID: MW-182S_080222
Date Collected: 08/02/22 11:05
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170977-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/09/22 15:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 17:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 17:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 17:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 17:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 17:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/08/22 17:02*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 17:02*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/08/22 17:02*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/08/22 17:02*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170809-B-16 MS	Matrix Spike	87	91	96	96
240-170809-B-16 MSD	Matrix Spike Duplicate	86	90	93	93
240-170977-1	TRIP BLANK_41	99	93	98	103
240-170977-2	MW-182S_080222	99	91	99	104
LCS 240-537897/5	Lab Control Sample	93	94	100	101
MB 240-537897/10	Method Blank	95	91	96	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170977-2	MW-182S_080222	84
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537897/10
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 13:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/08/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 13:52*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/08/22 13:52*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/08/22 13:52*	*1*

Lab Sample ID: LCS 240-537897/5
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.7		ug/L		99	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	28.8		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	24.4		ug/L		97	75 - 124
Trichloroethene	25.0	26.8		ug/L		107	70 - 122
Vinyl chloride	25.0	23.1		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	130	U	3130	2900		ug/L		93	56 - 135
cis-1,2-Dichloroethene	4300		3130	7080		ug/L		89	66 - 128
Tetrachloroethene	1700		3130	4890		ug/L		101	62 - 131
trans-1,2-Dichloroethene	130	U	3130	2850		ug/L		91	56 - 136
Trichloroethene	410		3130	3530		ug/L		100	61 - 124
Vinyl chloride	1400		3130	3900		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-170809-B-16 MSD
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 135	3	26
cis-1,2-Dichloroethene	4300		3130	6860		ug/L		82	66 - 128	3	14
Tetrachloroethene	1700		3130	4670		ug/L		94	62 - 131	5	20
trans-1,2-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 136	1	15
Trichloroethene	410		3130	3390		ug/L		95	61 - 124	4	15
Vinyl chloride	1400		3130	3880		ug/L		81	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

GC/MS VOA

Analysis Batch: 537897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170977-1	TRIP BLANK_41	Total/NA	Water	8260D	
240-170977-2	MW-182S_080222	Total/NA	Water	8260D	
MB 240-537897/10	Method Blank	Total/NA	Water	8260D	
LCS 240-537897/5	Lab Control Sample	Total/NA	Water	8260D	
240-170809-B-16 MS	Matrix Spike	Total/NA	Water	8260D	
240-170809-B-16 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170977-2	MW-182S_080222	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Client Sample ID: TRIP BLANK_41

Lab Sample ID: 240-170977-1

Date Collected: 08/02/22 00:00

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 14:40

Client Sample ID: MW-182S_080222

Lab Sample ID: 240-170977-2

Date Collected: 08/02/22 11:05

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 17:02
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 15:30

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170977-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac)/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 41	—	—		1						1					N	G	X	X	X	X	X	X	X	1 Trip Blank
MW-1825_080222	08/02/22	1105		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170977 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34766 STANDISH

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	08/02/22 1430	NOVI COLD STORAGE	ARCADIS	08/02/22 1430
[signature]	ARCADIS	8/3/22 1145	[signature]	EETA	8/3/22 1146
[signature]	EETA	8/3/22 1150	[signature]	EETNC	8-4-22 940

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8/18/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 123972**
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Nancy Daya

Cooler Received on 8-4-22 Opened on 8-4-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	~~Yes~~	No
-Were tamper/custody seals intact and uncompromised?	~~Yes~~	No NA
3. Shippers' packing slip attached to the cooler(s)?	~~Yes~~	No
4. Did custody papers accompany the sample(s)?	~~Yes~~	No
5. Were the custody papers relinquished & signed in the appropriate place?	~~Yes~~	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	~~Yes~~	No
7. Did all bottles arrive in good condition (Unbroken)?	~~Yes~~	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	~~Yes~~	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	~~Yes~~	No
10. Were correct bottle(s) used for the test(s) indicated?	~~Yes~~	No
11. Sufficient quantity received to perform indicated analyses?	~~Yes~~	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	~~Yes~~	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	~~Yes~~	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170977-1
Sample date: 2022-08-02
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170977-1

		Sample Name:	TRIP BLANK_41				MW-182S_080222			
		Lab Sample ID:	2401709771				2401709772			
		Sample Date:	8/2/2022				8/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

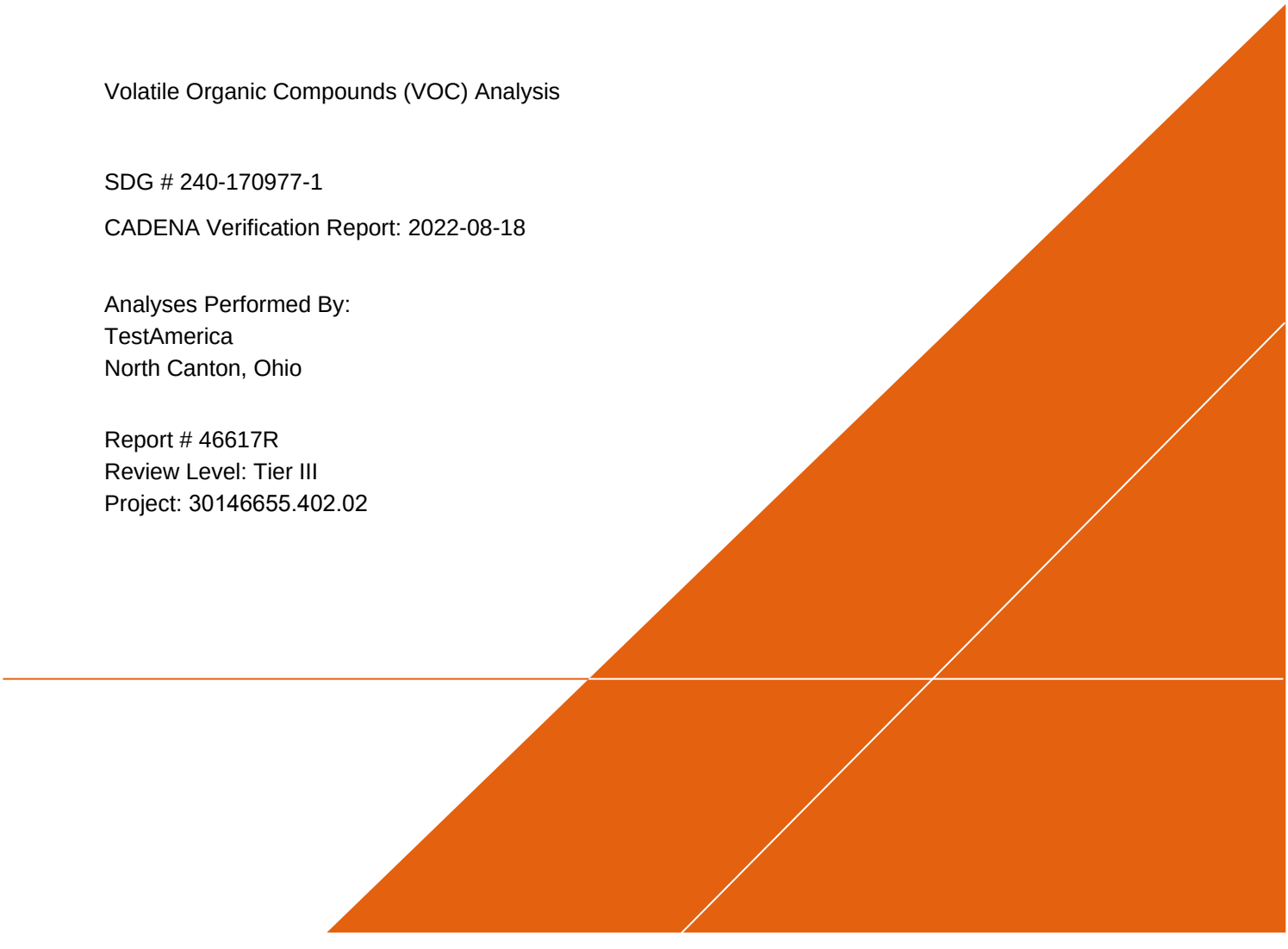
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170977-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46617R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170977-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_41	240-170977-1	Water	08/02/22		X	
MW-182S_080222	240-170977-2	Water	08/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_41	—	—		1						1					N	G	X	X	X	X	X	X	(See)				1 Trip Blank
MW-1825_080222	08/02/22	1105		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170977 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34766 STANDISH

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	08/02/22 1430	NOVI COLD STORAGE	ARCADIS	08/02/22 1430
[signature]	ARCADIS	8/3/22 1145	[signature]	EETA	8/3/22 1146
[signature]	EETA	8/3/22 1150	[signature]	EETNC	8-4-22 0940

Received in Laboratory by:

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08/18/2022

Client Sample ID: TRIP BLANK_41
Lab Sample ID: 240-170977-1
Date Collected: 08/02/22 00:00
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 14:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 14:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/08/22 14:40*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/08/22 14:40*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 14:40*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 14:40*	*1*

Client Sample ID: MW-182S_080222
Lab Sample ID: 240-170977-2
Date Collected: 08/02/22 11:05
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/09/22 15:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 17:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 17:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 17:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 17:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 17:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/08/22 17:02*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 17:02*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/08/22 17:02*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/08/22 17:02*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170979-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/18/2022 8:13:42 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Job ID: 240-170979-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170979-1

Comments
No additional comments.

Receipt
The samples were received on 8/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4° C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170979-1	TRIP BLANK_34	Water	08/02/22 00:00	08/04/22 09:40
240-170979-2	MW-225S_080222	Water	08/02/22 12:10	08/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Client Sample ID: TRIP BLANK_34 — Lab Sample ID: 240-170979-1

No Detections.

Client Sample ID: MW-225S_080222 — Lab Sample ID: 240-170979-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Client Sample ID: TRIP BLANK_34

Date Collected: 08/02/22 00:00
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170979-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 15:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 15:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 15:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/08/22 15:51*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/08/22 15:51*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 15:51*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/08/22 15:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Client Sample ID: MW-225S_080222
Date Collected: 08/02/22 12:10
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170979-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 16:18*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/08/22 16:38*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 16:38*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 16:38*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 16:38*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170809-B-16 MS	Matrix Spike	87	91	96	96
240-170809-B-16 MSD	Matrix Spike Duplicate	86	90	93	93
240-170979-1	TRIP BLANK_34	96	92	98	102
240-170979-2	MW-225S_080222	99	91	98	103
LCS 240-537897/5	Lab Control Sample	93	94	100	101
MB 240-537897/10	Method Blank	95	91	96	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170979-2	MW-225S_080222	86
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537897/10
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 13:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/08/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 13:52*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/08/22 13:52*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/08/22 13:52*	*1*

Lab Sample ID: LCS 240-537897/5
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.7		ug/L		99	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	28.8		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	24.4		ug/L		97	75 - 124
Trichloroethene	25.0	26.8		ug/L		107	70 - 122
Vinyl chloride	25.0	23.1		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	130	U	3130	2900		ug/L		93	56 - 135
cis-1,2-Dichloroethene	4300		3130	7080		ug/L		89	66 - 128
Tetrachloroethene	1700		3130	4890		ug/L		101	62 - 131
trans-1,2-Dichloroethene	130	U	3130	2850		ug/L		91	56 - 136
Trichloroethene	410		3130	3530		ug/L		100	61 - 124
Vinyl chloride	1400		3130	3900		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-170809-B-16 MSD
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 135	3	26
cis-1,2-Dichloroethene	4300		3130	6860		ug/L		82	66 - 128	3	14
Tetrachloroethene	1700		3130	4670		ug/L		94	62 - 131	5	20
trans-1,2-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 136	1	15
Trichloroethene	410		3130	3390		ug/L		95	61 - 124	4	15
Vinyl chloride	1400		3130	3880		ug/L		81	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	86		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	93		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		66 - 120		08/09/22 13:17	1

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		66 - 120

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

GC/MS VOA

Analysis Batch: 537897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170979-1	TRIP BLANK_34	Total/NA	Water	8260D	
240-170979-2	MW-225S_080222	Total/NA	Water	8260D	
MB 240-537897/10	Method Blank	Total/NA	Water	8260D	
LCS 240-537897/5	Lab Control Sample	Total/NA	Water	8260D	
240-170809-B-16 MS	Matrix Spike	Total/NA	Water	8260D	
240-170809-B-16 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170979-2	MW-225S_080222	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Client Sample ID: TRIP BLANK_34

Lab Sample ID: 240-170979-1

Date Collected: 08/02/22 00:00

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 15:51

Client Sample ID: MW-225S_080222

Lab Sample ID: 240-170979-2

Date Collected: 08/02/22 12:10

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 16:38
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 16:18

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170979-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

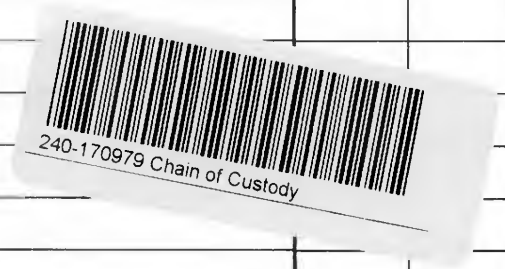
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04				Job/SDG No:
PO # 30080642.402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_34	—	—		1						1					N	G	X	X	X	X	X	X	~~X~~ ST				1 Trip Blank
MW-2255_080222	08/02/22	1210		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34800 Standish
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	08/02/22 1430	NOVI COLD STORAGE	ARCADIS	08/02/22 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/3/22 1145	[signature]	EETA	8/3/22 1146
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	8/3/22 1150	[signature]	EETNC	8-4-22 940

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 170979
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Nancy Daya

Cooler Received on 8-4-22 Opened on 8-4-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	~~Yes~~	No
-Were tamper/custody seals intact and uncompromised?	~~Yes~~	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	~~Yes~~	No
11. Sufficient quantity received to perform indicated analyses?	Yes	~~No~~
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	~~Yes~~	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	~~No~~
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170979-1
Sample date: 2022-08-02
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170979-1

		Sample Name:	TRIP BLANK_34				MW-225S_080222			
		Lab Sample ID:	2401709791				2401709792			
		Sample Date:	8/2/2022				8/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

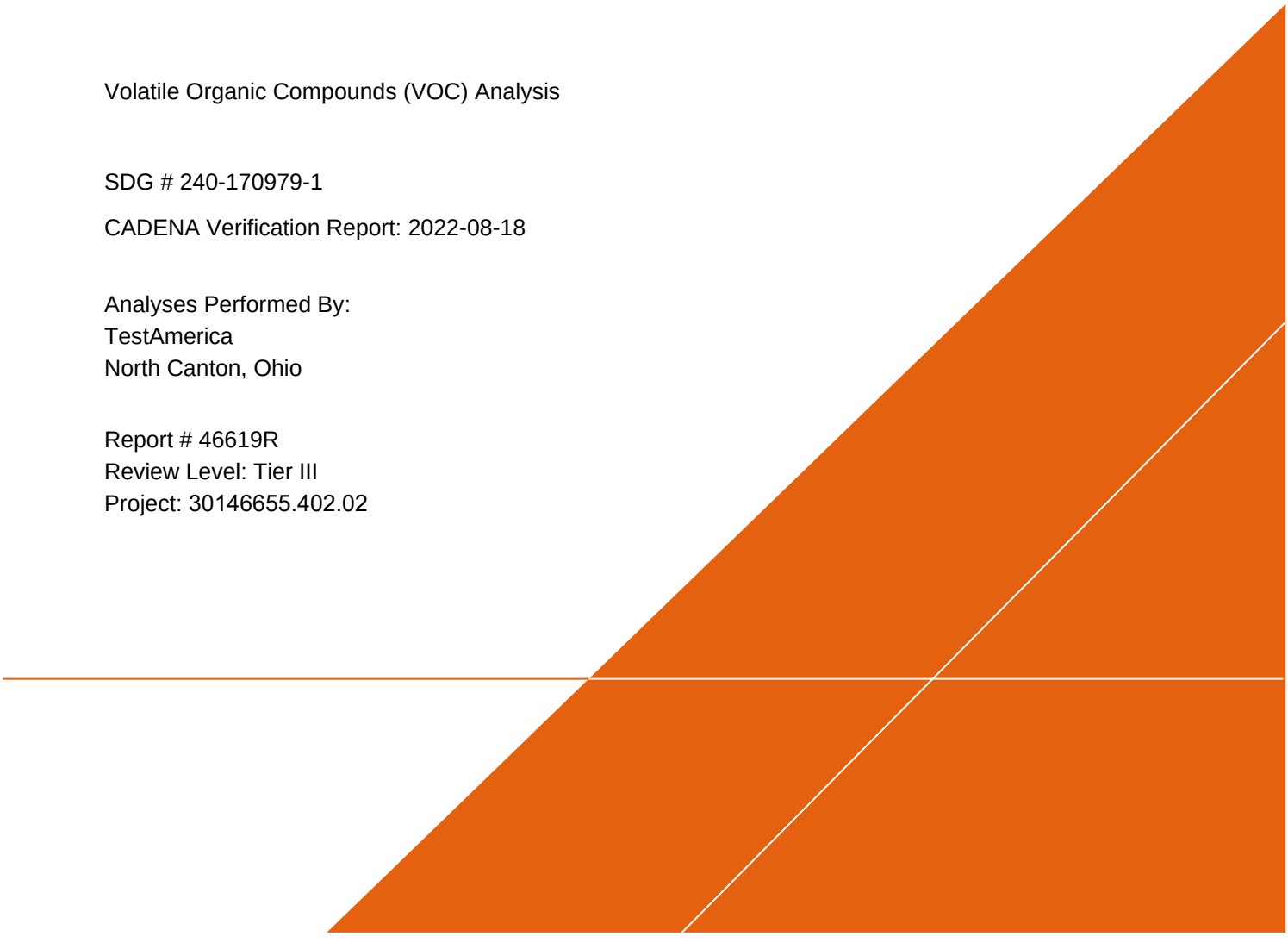
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170979-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46619R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170979-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_34	240-170979-1	Water	08/02/22		X	
MW-225S_080222	240-170979-2	Water	08/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com			
Phone: 248-994-2240	Sampler Name: Lottie Jay	Analysis Turnaround Time		For lab use only
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Number: 30080642.402.04		10 day ☑ 2 weeks		Lab sampling:
PO # 30080642.402.04	Shipping/Tracking No:			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_34	—	—		1						1					N	G	X	X	X	X	X	X	~~X~~ ST				1 Trip Blank
MW-225S_080222	08/02/22	1210		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170979 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34800 Standish

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	08/02/22 1430	NOVI COLD STORAGE	ARCADIS	08/02/22 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/3/22/1145	[signature]	EETA	8/3/22 1146
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	8/3/22 1150	[signature]	EETNC	8-4-22 940

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08/18/2022

Client Sample ID: TRIP BLANK_34
Lab Sample ID: 240-170979-1
Date Collected: 08/02/22 00:00
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 15:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 15:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 15:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/08/22 15:51*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/08/22 15:51*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 15:51*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/08/22 15:51*	*1*

Client Sample ID: MW-225S_080222
Lab Sample ID: 240-170979-2
Date Collected: 08/02/22 12:10
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 16:18*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/08/22 16:38*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 16:38*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 16:38*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 16:38*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170893-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 10:35:43 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Job ID: 240-170893-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170893-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170893-1	TRIP BLANK_38	Water	08/01/22 00:00	08/03/22 09:45
240-170893-2	MW-110S_080122	Water	08/01/22 14:10	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Client Sample ID: TRIP BLANK_38 — Lab Sample ID: 240-170893-1

No Detections.

Client Sample ID: MW-110S_080122 — Lab Sample ID: 240-170893-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Client Sample ID: TRIP BLANK_38

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170893-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/04/22 19:15*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/04/22 19:15*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/04/22 19:15*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/04/22 19:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Client Sample ID: MW-110S_080122
Date Collected: 08/01/22 14:10
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170893-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/09/22 14:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 19:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 19:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 19:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/04/22 19:39*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/04/22 19:39*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/04/22 19:39*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/04/22 19:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170893-1	TRIP BLANK_38	95	91	102	101
240-170893-2	MW-110S_080122	95	90	103	103
240-170893-2 MS	MW-110S_080122	95	94	103	104
240-170893-2 MSD	MW-110S_080122	97	94	103	104
LCS 240-537519/5	Lab Control Sample	92	92	99	99
LCSD 240-537519/8	Lab Control Sample Dup	90	91	100	99
MB 240-537519/9	Method Blank	95	89	101	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170893-2	MW-110S_080122	87
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537519/9
Matrix: Water
Analysis Batch: 537519

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 14:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 14:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 14:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 14:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/04/22 14:21*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/04/22 14:21*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/04/22 14:21*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/04/22 14:21*	*1*

Lab Sample ID: LCS 240-537519/5
Matrix: Water
Analysis Batch: 537519

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.8		ug/L		99	63 - 134		
cis-1,2-Dichloroethene			20.0	19.3		ug/L		97	77 - 123		
Tetrachloroethene			20.0	17.7		ug/L		89	76 - 123		
trans-1,2-Dichloroethene			20.0	18.5		ug/L		93	75 - 124		
Trichloroethene			20.0	19.5		ug/L		98	70 - 122		
Vinyl chloride			20.0	18.5		ug/L		93	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: LCSD 240-537519/8
Matrix: Water
Analysis Batch: 537519

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene			20.0	19.4		ug/L		97	63 - 134	2	35
cis-1,2-Dichloroethene			20.0	18.9		ug/L		95	77 - 123	2	35
Tetrachloroethene			20.0	18.1		ug/L		91	76 - 123	2	35
trans-1,2-Dichloroethene			20.0	18.4		ug/L		92	75 - 124	1	35
Trichloroethene			20.0	19.3		ug/L		97	70 - 122	1	35
Vinyl chloride			20.0	18.4		ug/L		92	60 - 144	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 240-537519/8
Matrix: Water
Analysis Batch: 537519

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-170893-2 MS
Matrix: Water
Analysis Batch: 537519

Client Sample ID: MW-110S_080122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.7		ug/L		99	66 - 128
Tetrachloroethene	1.0	U	20.0	18.1		ug/L		91	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136
Trichloroethene	1.0	U	20.0	19.7		ug/L		99	61 - 124
Vinyl chloride	1.0	U	20.0	19.4		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-170893-2 MSD
Matrix: Water
Analysis Batch: 537519

Client Sample ID: MW-110S_080122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	22.7		ug/L		114	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	20.0	22.0		ug/L		110	66 - 128	11	14
Tetrachloroethene	1.0	U	20.0	20.2		ug/L		101	62 - 131	11	20
trans-1,2-Dichloroethene	1.0	U	20.0	21.4		ug/L		107	56 - 136	11	15
Trichloroethene	1.0	U	20.0	21.9		ug/L		110	61 - 124	10	15
Vinyl chloride	1.0	U	20.0	21.0		ug/L		105	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		66 - 120		08/09/22 13:17	1

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		66 - 120

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

GC/MS VOA

Analysis Batch: 537519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170893-1	TRIP BLANK_38	Total/NA	Water	8260D	
240-170893-2	MW-110S_080122	Total/NA	Water	8260D	
MB 240-537519/9	Method Blank	Total/NA	Water	8260D	
LCS 240-537519/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 240-537519/8	Lab Control Sample Dup	Total/NA	Water	8260D	
240-170893-2 MS	MW-110S_080122	Total/NA	Water	8260D	
240-170893-2 MSD	MW-110S_080122	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170893-2	MW-110S_080122	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Client Sample ID: TRIP BLANK_38

Lab Sample ID: 240-170893-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537519	HMB	EET CAN	08/04/22 19:15

Client Sample ID: MW-110S_080122

Lab Sample ID: 240-170893-2

Date Collected: 08/01/22 14:10

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537519	HMB	EET CAN	08/04/22 19:39
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 14:43

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170893-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_38	—	—		1						1					N	G	X	X	X	X	X	X	X (DW)				1 Trip Blank
MW-110S-080122	08/01/22	1410		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170893 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34850 STANDISH
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time:
Lottie Jay	ARCADIS	08/01/22 1512	NOVI COLD STORAGE	ARCADIS	08/01/22 1512
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/2/22 947	Jeri Hall	EETA	8/2/22 948
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/2/22 950	[signature]	EETA	8/3/22 945

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170893

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** ~~170840~~
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Yes), and sample type of grab/comp (Yes)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 210420L6	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

CK 8.3.22 8.3.22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170893-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, LCS/LCD RPD, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170893-1

		Sample Name:	TRIP BLANK_38				MW-110S_080122			
		Lab Sample ID:	2401708931				2401708932			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

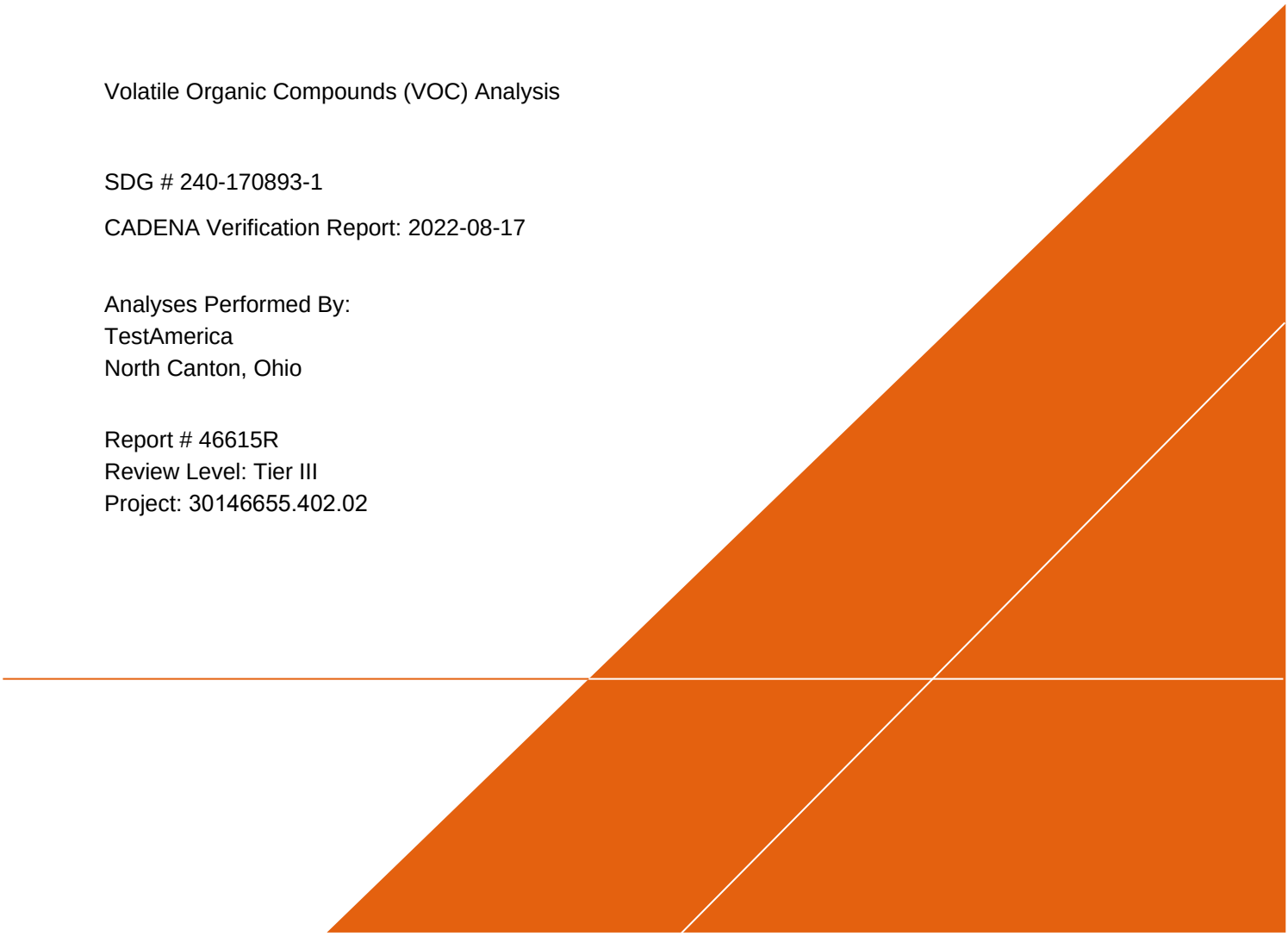
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170893-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46615R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170893-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_38	240-170893-1	Water	08/01/22		X	
MW-110S_080122	240-170893-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

190

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_38	—	—		1						1					N	G	X	X	X	X	X	X	X (a)				1 Trip Blank
MW-110S-080122	08/01/22	1410		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170893 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34850 STANDISH
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	08/01/22 1512	NOVI COLD STORAGE	ARCADIS	08/01/22 1512
[signature]	ARCADIS	8/2/22 947	[signature]	EETA	8/2/22 948
[signature]	EETA	8/2/22 950	[signature]	EETA	8/3/22 945

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08/17/2022

Client Sample ID: TRIP BLANK_38
Lab Sample ID: 240-170893-1
Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/04/22 19:15*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/04/22 19:15*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/04/22 19:15*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/04/22 19:15*	*1*

Client Sample ID: MW-110S_080122
Lab Sample ID: 240-170893-2
Date Collected: 08/01/22 14:10
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/09/22 14:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 19:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 19:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 19:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 19:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/04/22 19:39*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/04/22 19:39*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/04/22 19:39*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/04/22 19:39*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171941-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/6/2022 8:00:00 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Job ID: 240-171941-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171941-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
Method 8260D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-540141.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171941-1	TRIP BLANK_160	Water	08/19/22 00:00	08/23/22 09:30
240-171941-2	MW-161S_081922	Water	08/19/22 09:45	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Client Sample ID: TRIP BLANK_160 — Lab Sample ID: 240-171941-1

No Detections.

Client Sample ID: MW-161S_081922 — Lab Sample ID: 240-171941-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Client Sample ID: TRIP BLANK_160
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171941-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 21:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 21:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 21:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/25/22 21:31*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/25/22 21:31*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/25/22 21:31*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/25/22 21:31*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Client Sample ID: MW-161S_081922
Date Collected: 08/19/22 09:45
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171941-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 23:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 21:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 21:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 21:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/25/22 21:53*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/25/22 21:53*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/25/22 21:53*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*08/25/22 21:53*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171941-1	TRIP BLANK_160	109	94	95	101
240-171941-2	MW-161S_081922	100	86	92	93
LCS 240-540141/5	Lab Control Sample	94	90	91	90
MB 240-540141/8	Method Blank	102	91	95	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171941-2	MW-161S_081922	71
240-171965-G-5 MS	Matrix Spike	83
240-171965-M-5 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
MB 240-540396/4	Method Blank	71

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540141/8
Matrix: Water
Analysis Batch: 540141

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 13:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 13:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 13:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 13:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 13:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 13:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/25/22 13:45*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/25/22 13:45*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/25/22 13:45*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/25/22 13:45*	*1*

Lab Sample ID: LCS 240-540141/5
Matrix: Water
Analysis Batch: 540141

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	20.5		ug/L		103	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	21.3		ug/L		106	75 - 124
Trichloroethene	20.0	19.5		ug/L		98	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.61		ug/L		96	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-G-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-M-5 MSD
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

GC/MS VOA

Analysis Batch: 540141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171941-1	TRIP BLANK_160	Total/NA	Water	8260D	
240-171941-2	MW-161S_081922	Total/NA	Water	8260D	
MB 240-540141/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540141/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171941-2	MW-161S_081922	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171965-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Client Sample ID: TRIP BLANK_160

Lab Sample ID: 240-171941-1

Date Collected: 08/19/22 00:00

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540141	TJL1	EET CAN	08/25/22 21:31

Client Sample ID: MW-161S_081922

Lab Sample ID: 240-171941-2

Date Collected: 08/19/22 09:45

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540141	TJL1	EET CAN	08/25/22 21:53
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/26/22 23:17

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_160	8/19/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-161s_081922	08/19/22	0945		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171941 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ( ) Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34851 Beacon side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/19/22/1400	Arcadis Cold Storage	Arcadis	08/19/22 1700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	Eurofins	8/22/22		EE TNC	8.23.22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hardel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171941-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-06
Initial Data Verification completed by CADENA: 2022-09-06
Number of Samples:2
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171941-1

		Sample Name:	TRIP BLANK_160				MW-161S_081922			
		Lab Sample ID:	2401719411				2401719412			
		Sample Date:	8/19/2022				8/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

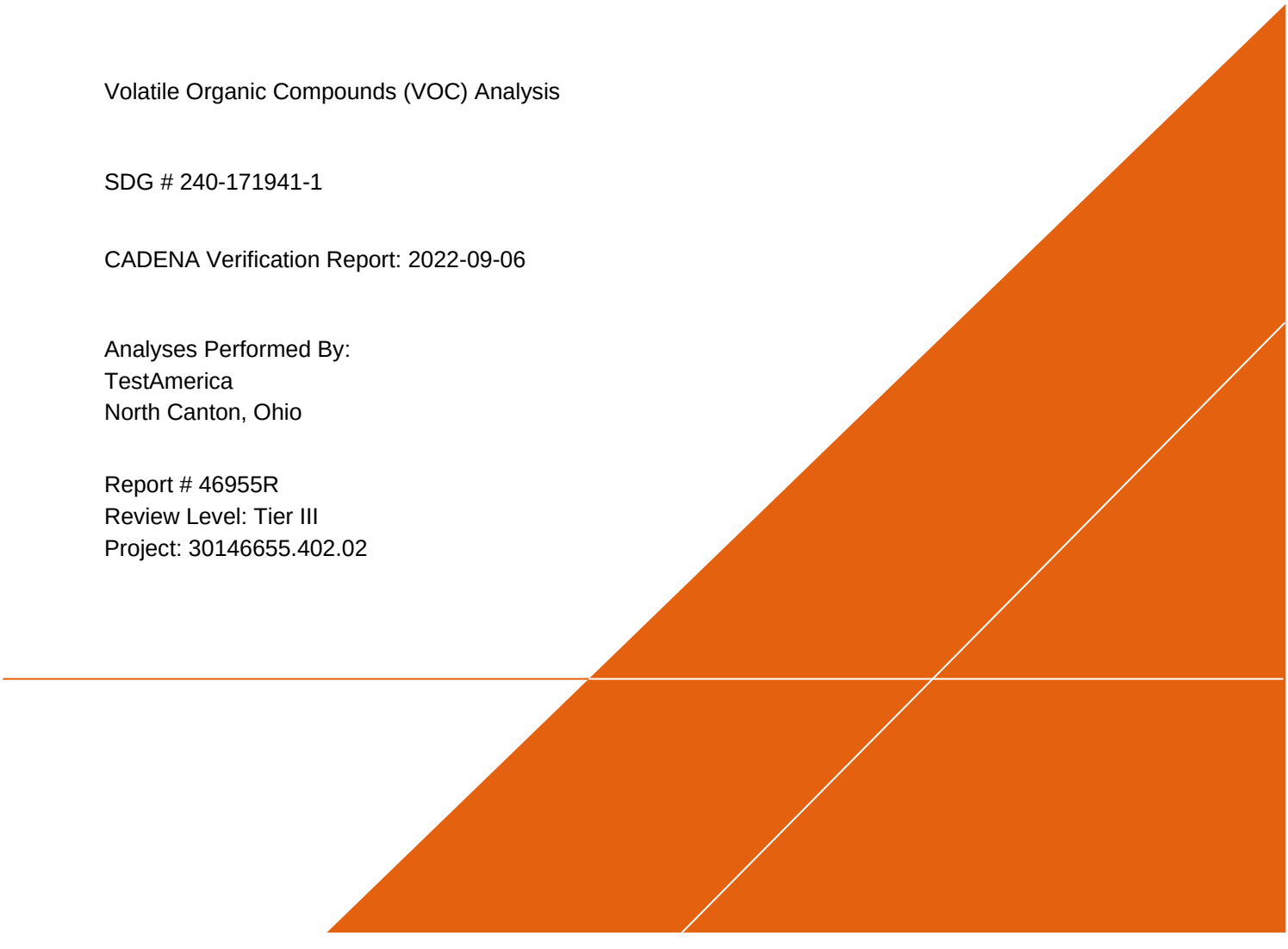
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171941-1

CADENA Verification Report: 2022-09-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46955R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171941-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_160	240-171941-1	Water	08/19/22		X	
MW-161S_081922	240-171941-2	Water	08/19/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_160	8/19/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-161s_081922	08/19/22	0945		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171941 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34851 Beacon Side Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/19/22/1400	Arcadis Cold Storage	Arcadis	08/19/22/1700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	Eurofins	8/22/22		EE TNC	8.23.22 9:30

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Client Sample ID: TRIP BLANK_160
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171941-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 21:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 21:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 21:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/25/22 21:31*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/25/22 21:31*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/25/22 21:31*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/25/22 21:31*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171941-1

Client Sample ID: MW-161S_081922
Date Collected: 08/19/22 09:45
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171941-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 23:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 21:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 21:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 21:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/25/22 21:53*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/25/22 21:53*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/25/22 21:53*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*08/25/22 21:53*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171395-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 1:45:54 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Job ID: 240-171395-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171395-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 3.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171395-1	TRIP BLANK_129	Water	08/09/22 00:00	08/11/22 09:30
240-171395-2	MW-216S_080922	Water	08/09/22 14:20	08/11/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Client Sample ID: TRIP BLANK_129 — Lab Sample ID: 240-171395-1

No Detections.

Client Sample ID: MW-216S_080922 — Lab Sample ID: 240-171395-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Client Sample ID: TRIP BLANK_129
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171395-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 14:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 14:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 14:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 14:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/12/22 14:54*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/12/22 14:54*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 14:54*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/12/22 14:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Client Sample ID: MW-216S_080922
Date Collected: 08/09/22 14:20
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171395-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 06:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/13/22 06:26*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 19:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 19:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 19:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 19:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 19:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/12/22 19:55*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/12/22 19:55*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/12/22 19:55*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/12/22 19:55*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171395-1	TRIP BLANK_129	94	93	95	82
240-171395-2	MW-216S_080922	91	92	93	82
240-171402-D-3 MS	Matrix Spike	88	95	95	83
240-171402-G-3 MSD	Matrix Spike Duplicate	89	98	97	81
LCS 240-538724/4	Lab Control Sample	90	97	96	85
MB 240-538724/6	Method Blank	95	94	97	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171299-I-3 MS	Matrix Spike	91
240-171299-O-3 MSD	Matrix Spike Duplicate	90
240-171395-2	MW-216S_080922	89
LCS 240-538760/3	Lab Control Sample	89
MB 240-538760/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538724/6
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 14:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 14:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 14:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 14:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/12/22 14:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 14:29*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/12/22 14:29*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 14:29*	*1*

Lab Sample ID: LCS 240-538724/4
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.6		ug/L		91	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	22.7		ug/L		91	70 - 122
Vinyl chloride	12.5	12.2		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	18.4		ug/L		74	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	56 - 136
Trichloroethene	1.0	U	25.0	19.5		ug/L		78	61 - 124
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Lab Sample ID: 240-171402-G-3 MSD
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	66 - 128	9	14
Tetrachloroethene	1.0	U	25.0	19.6		ug/L		78	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	8	15
Trichloroethene	1.0	U	25.0	20.8		ug/L		83	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538760/4
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 21:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 21:10*	*1*

Lab Sample ID: LCS 240-538760/3
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171299-I-3 MS
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.99		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171299-O-3 MSD
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.83		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

GC/MS VOA

Analysis Batch: 538724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171395-1	TRIP BLANK_129	Total/NA	Water	8260D	
240-171395-2	MW-216S_080922	Total/NA	Water	8260D	
MB 240-538724/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538724/4	Lab Control Sample	Total/NA	Water	8260D	
240-171402-D-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171402-G-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171395-2	MW-216S_080922	Total/NA	Water	8260D SIM	
MB 240-538760/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538760/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171299-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171299-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Client Sample ID: TRIP BLANK_129

Lab Sample ID: 240-171395-1

Date Collected: 08/09/22 00:00

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 14:54

Client Sample ID: MW-216S_080922

Lab Sample ID: 240-171395-2

Date Collected: 08/09/22 14:20

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 19:55
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 06:26

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_129	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2165-080922	8/9/22	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171395 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34851 WADSWORTH

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lauryn Jay	ARCADIS	8/9/22 1535	NOVICOLD STORAGE	ARCADIS	8/9/22 1535
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/10/22 0935		EET-A	8/10/22 0935
Relinquished by:	Company:	Date/Time:	Received by Laboratory by:	Company:	Date/Time:
	EET-A	8/10/22 938		EENC	8-11-22 930

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Matt
Cooler Received on 8-11-22 Opened on 8-11-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other
Receipt After-hours: Drop-off Date/Time _____ Storage Location _____
Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	1.7	2.4	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171395-1
Sample date: 2022-08-09
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171395-1

		Sample Name:	TRIP BLANK_129				MW-216S_080922			
		Lab Sample ID:	2401713951				2401713952			
		Sample Date:	8/9/2022				8/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

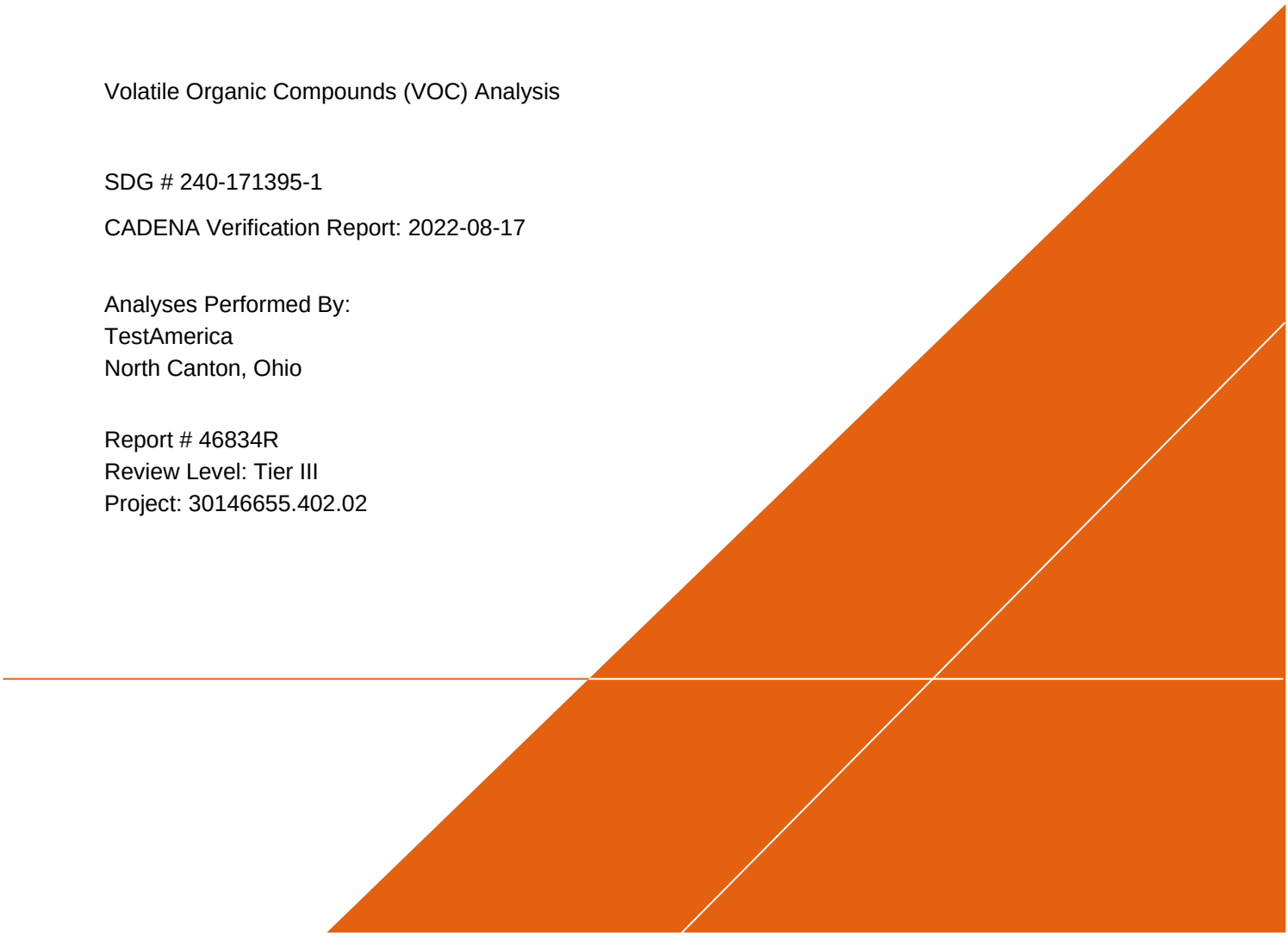
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171395-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46834R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171395-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_129	240-171395-1	Water	08/09/22		X	
MW-216S_080922	240-171395-2	Water	08/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_129	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2165-080922	8/9/22	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171395 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34851 WADSWORTH

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lauryn Jay	ARCADIS	8/9/22 1535	NOVICOLD STORAGE	ARCADIS	8/9/22 1535
	ARCADIS	8/10/22 0935		EET-A	8/10/22 0935
	EET-A	8/10/22 938	Received in Laboratory by:	EENC	8-11-22 930

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Client Sample ID: TRIP BLANK_129
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171395-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 14:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 14:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 14:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 14:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/12/22 14:54*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/12/22 14:54*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 14:54*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/12/22 14:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171395-1

Client Sample ID: MW-216S_080922
Date Collected: 08/09/22 14:20
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171395-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 06:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/13/22 06:26*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 19:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 19:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 19:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 19:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 19:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/12/22 19:55*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/12/22 19:55*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/12/22 19:55*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/12/22 19:55*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171585-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 12:26:02 PM
Nicole Kalis, Project Manager I
(330)497-9396
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Designee for

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171585-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171585-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-539260 was outside the method criteria for the following analyte(s): Tetrachloroethene. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated. TRIP BLANK_19 (240-171585-1), MW-116S_081222 (240-171585-2) and (CCVIS 240-539260/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171585-1	TRIP BLANK_19	Water	08/12/22 00:00	08/16/22 09:00
240-171585-2	MW-116S_081222	Water	08/12/22 10:55	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Client Sample ID: TRIP BLANK_19 — Lab Sample ID: 240-171585-1

No Detections.

Client Sample ID: MW-116S_081222 — Lab Sample ID: 240-171585-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Client Sample ID: TRIP BLANK_19
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171585-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/17/22 19:57*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 19:57*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/17/22 19:57*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/17/22 19:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Client Sample ID: MW-116S_081222
Date Collected: 08/12/22 10:55
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171585-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 23:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/20/22 23:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/17/22 20:21*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 20:21*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/17/22 20:21*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 20:21*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171570-A-3 MS	Matrix Spike	107	104	101	110
240-171570-A-3 MSD	Matrix Spike Duplicate	100	90	95	103
240-171585-1	TRIP BLANK_19	100	86	92	105
240-171585-2	MW-116S_081222	100	86	92	104
LCS 240-539260/5	Lab Control Sample	92	91	90	100
MB 240-539260/8	Method Blank	97	90	91	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171585-2	MW-116S_081222	74
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539260/8
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/17/22 15:40*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 15:40*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/17/22 15:40*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 15:40*	*1*

Lab Sample ID: LCS 240-539260/5
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	77 - 123
Tetrachloroethene	20.0	23.0		ug/L		115	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	22.5		ug/L		113	70 - 122
Vinyl chloride	20.0	18.8		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	500	U	10000	10300		ug/L		103	56 - 135
cis-1,2-Dichloroethene	500	U	10000	10200		ug/L		102	66 - 128
Tetrachloroethene	500	U	10000	10400		ug/L		104	62 - 131
trans-1,2-Dichloroethene	500	U	10000	9700		ug/L		97	56 - 136
Trichloroethene	500	U	10000	10200		ug/L		102	61 - 124
Vinyl chloride	500	U	10000	10300		ug/L		103	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171570-A-3 MS
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*110*		*73 - 120*

Lab Sample ID: 240-171570-A-3 MSD
Matrix: Water
Analysis Batch: 539260

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	500	U	10000	10900		ug/L		109	56 - 135	6	26
cis-1,2-Dichloroethene	500	U	10000	11300		ug/L		113	66 - 128	10	14
Tetrachloroethene	500	U	10000	11200		ug/L		112	62 - 131	7	20
trans-1,2-Dichloroethene	500	U	10000	10400		ug/L		104	56 - 136	7	15
Trichloroethene	500	U	10000	10600		ug/L		106	61 - 124	4	15
Vinyl chloride	500	U	10000	10700		ug/L		107	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

GC/MS VOA

Analysis Batch: 539260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171585-1	TRIP BLANK_19	Total/NA	Water	8260D	
240-171585-2	MW-116S_081222	Total/NA	Water	8260D	
MB 240-539260/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539260/5	Lab Control Sample	Total/NA	Water	8260D	
240-171570-A-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171570-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171585-2	MW-116S_081222	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Client Sample ID: TRIP BLANK_19

Lab Sample ID: 240-171585-1

Date Collected: 08/12/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 19:57

Client Sample ID: MW-116S_081222

Lab Sample ID: 240-171585-2

Date Collected: 08/12/22 10:55

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539260	AJS	EET CAN	08/17/22 20:21
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 23:03

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171585-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record 30137

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_19	8/12/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-116s_081222	08/12/22	1055		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171585 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 3485 Wadsworth bank yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/12/22/1610	Arcadis Cold Stor.	Arcadis	08/12/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/15/22 1005		EE7A	8/15/22 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EE7A	8/15/22 10:00		EETNL	8-16-22 0500

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171585**
Barberton Facility

Client Arcadis Site Name Ford - Livonia | Cooler unpacked by: [illegible]

Cooler Received on 5-16-22 Opened on 5-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? [illegible] ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171585

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171585-1
Sample date: 2022-08-12
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171585-1

		Sample Name:	TRIP BLANK_19				MW-116S_081222			
		Lab Sample ID:	2401715851				2401715852			
		Sample Date:	8/12/2022				8/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

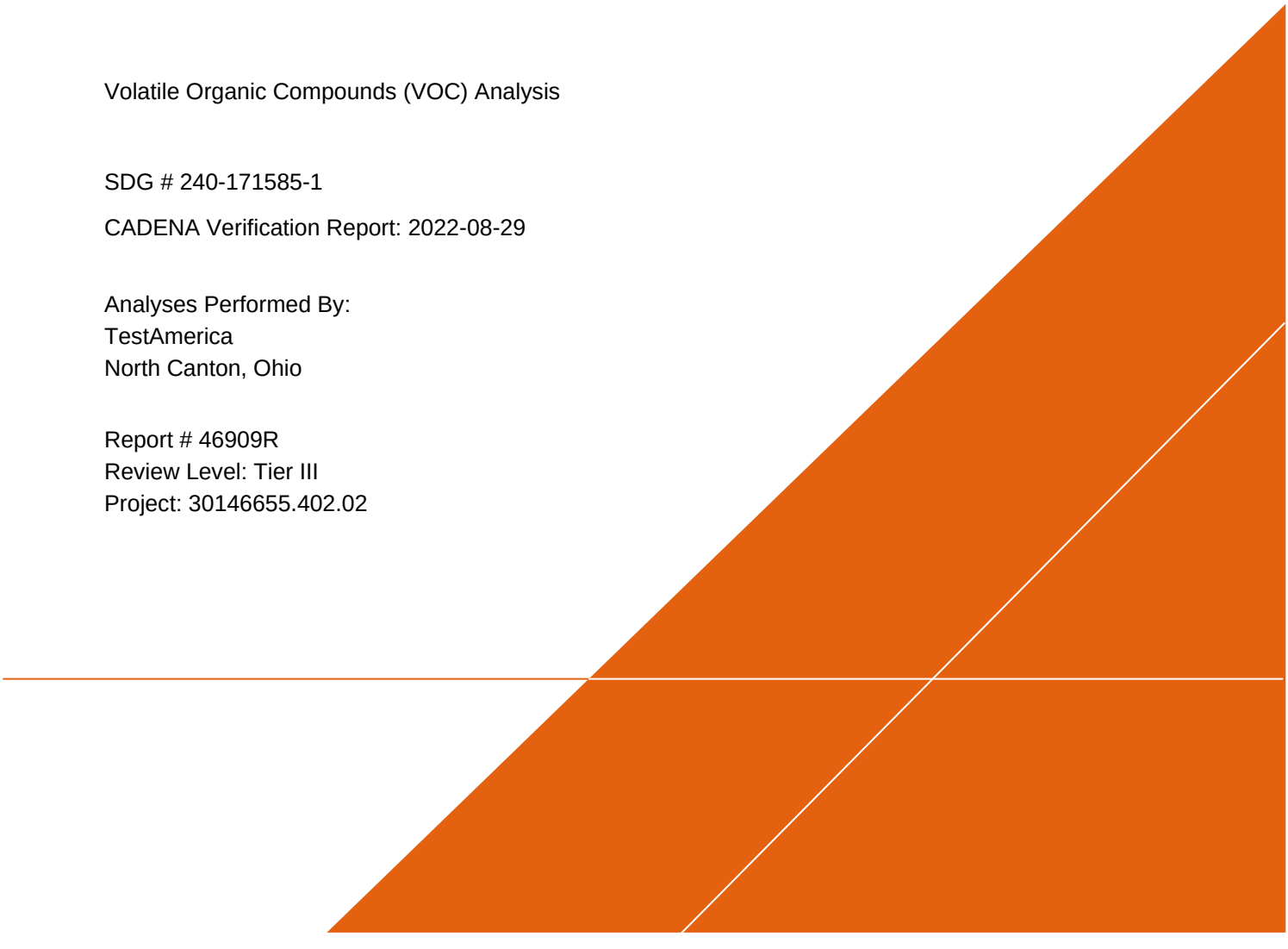
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171585-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46909R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171585-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_19	240-171585-1	Water	08/12/22		X	
MW-116S_081222	240-171585-2	Water	08/12/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_19 MW-116S_081222	Continuous Calibration Verification %D	Tetrachloroethene	+22.6%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record 30137

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_19	8/12/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-116s_081222	08/12/22	1055		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171585 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 3485 Wadsworth bank yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/12/22/1610	Arcadis Cold Stor.	Arcadis	08/12/22/1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/15/22 10:00		EETNL	8-16-22 0900

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Client Sample ID: TRIP BLANK_19
Lab Sample ID: 240-171585-1
Date Collected: 08/12/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/17/22 19:57*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 19:57*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/17/22 19:57*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/17/22 19:57*	*1*

Client Sample ID: MW-116S_081222
Lab Sample ID: 240-171585-2
Date Collected: 08/12/22 10:55
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 23:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/20/22 23:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/17/22 20:21*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 20:21*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/17/22 20:21*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/17/22 20:21*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171394-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 1:45:13 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Job ID: 240-171394-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171394-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 3.7º C.

GC/MS VOA
No additonal analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171394-1	TRIP BLANK_70	Water	08/09/22 00:00	08/11/22 09:30
240-171394-2	MW-179S_080922	Water	08/09/22 12:32	08/11/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Client Sample ID: TRIP BLANK_70 — Lab Sample ID: 240-171394-1

No Detections.

Client Sample ID: MW-179S_080922 — Lab Sample ID: 240-171394-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Client Sample ID: TRIP BLANK_70

Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171394-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 12:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 12:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 12:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*08/15/22 12:41*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/15/22 12:41*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/15/22 12:41*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*08/15/22 12:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Client Sample ID: MW-179S_080922
Date Collected: 08/09/22 12:32
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171394-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 06:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/13/22 06:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 13:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 13:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 13:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/15/22 13:29*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/15/22 13:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/15/22 13:29*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/15/22 13:29*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171394-1	TRIP BLANK_70	84	89	96	93
240-171394-2	MW-179S_080922	86	88	95	94
240-171412-A-2 MS	Matrix Spike	86	92	97	95
240-171412-F-2 MSD	Matrix Spike Duplicate	87	94	98	95
LCS 240-538850/5	Lab Control Sample	81	91	99	91
MB 240-538850/8	Method Blank	87	89	96	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171299-I-3 MS	Matrix Spike	91
240-171299-O-3 MSD	Matrix Spike Duplicate	90
240-171394-2	MW-179S_080922	91
LCS 240-538760/3	Lab Control Sample	89
MB 240-538760/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538850/8
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 12:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 12:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 12:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 12:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/15/22 12:17*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/15/22 12:17*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/15/22 12:17*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/15/22 12:17*	*1*

Lab Sample ID: LCS 240-538850/5
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.6		ug/L		95	63 - 134
cis-1,2-Dichloroethene	25.0	22.7		ug/L		91	77 - 123
Tetrachloroethene	25.0	29.5		ug/L		118	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	25.6		ug/L		102	70 - 122
Vinyl chloride	25.0	20.7		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-171412-A-2 MS
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128
Tetrachloroethene	1.0	U	25.0	29.3		ug/L		117	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	25.9		ug/L		104	61 - 124
Vinyl chloride	1.0	U	25.0	20.4		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171412-A-2 MS
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171412-F-2 MSD
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.3		ug/L		97	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		95	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	30.9		ug/L		124	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136	0	15
Trichloroethene	1.0	U	25.0	26.3		ug/L		105	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538760/4
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 21:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 21:10*	*1*

Lab Sample ID: LCS 240-538760/3
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171299-I-3 MS
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.99		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171299-O-3 MSD
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.83		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

GC/MS VOA

Analysis Batch: 538760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171394-2	MW-179S_080922	Total/NA	Water	8260D SIM	
MB 240-538760/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538760/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171299-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171299-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 538850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171394-1	TRIP BLANK_70	Total/NA	Water	8260D	
240-171394-2	MW-179S_080922	Total/NA	Water	8260D	
MB 240-538850/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538850/5	Lab Control Sample	Total/NA	Water	8260D	
240-171412-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171412-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Client Sample ID: TRIP BLANK_70

Lab Sample ID: 240-171394-1

Date Collected: 08/09/22 00:00

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 12:41

Client Sample ID: MW-179S_080922

Lab Sample ID: 240-171394-2

Date Collected: 08/09/22 12:32

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 13:29
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 06:01

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

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TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day		Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_70	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1795_080922	8/9/22	1232		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171394 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34870 WADSWORTH
Submit all results through Cadena at jtomalia@cadenaco.com Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/9/22 1535	NOVI COLD STORAGE	ARCADIS	8/9/22 1535
[signature]	ARCADIS	8/10/22 0935	[signature]	EETA	8/10/22 0935
[signature]	EETA	8/10/22 938	[signature]	EENC	8-11-22 930

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Matt
Cooler Received on 8-11-22 Opened on 8-11-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location
Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	1.7	2.4	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
				☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171394-1
Sample date: 2022-08-09
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171394-1

		Sample Name:	TRIP BLANK_70				MW-179S_080922			
		Lab Sample ID:	2401713941				2401713942			
		Sample Date:	8/9/2022				8/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

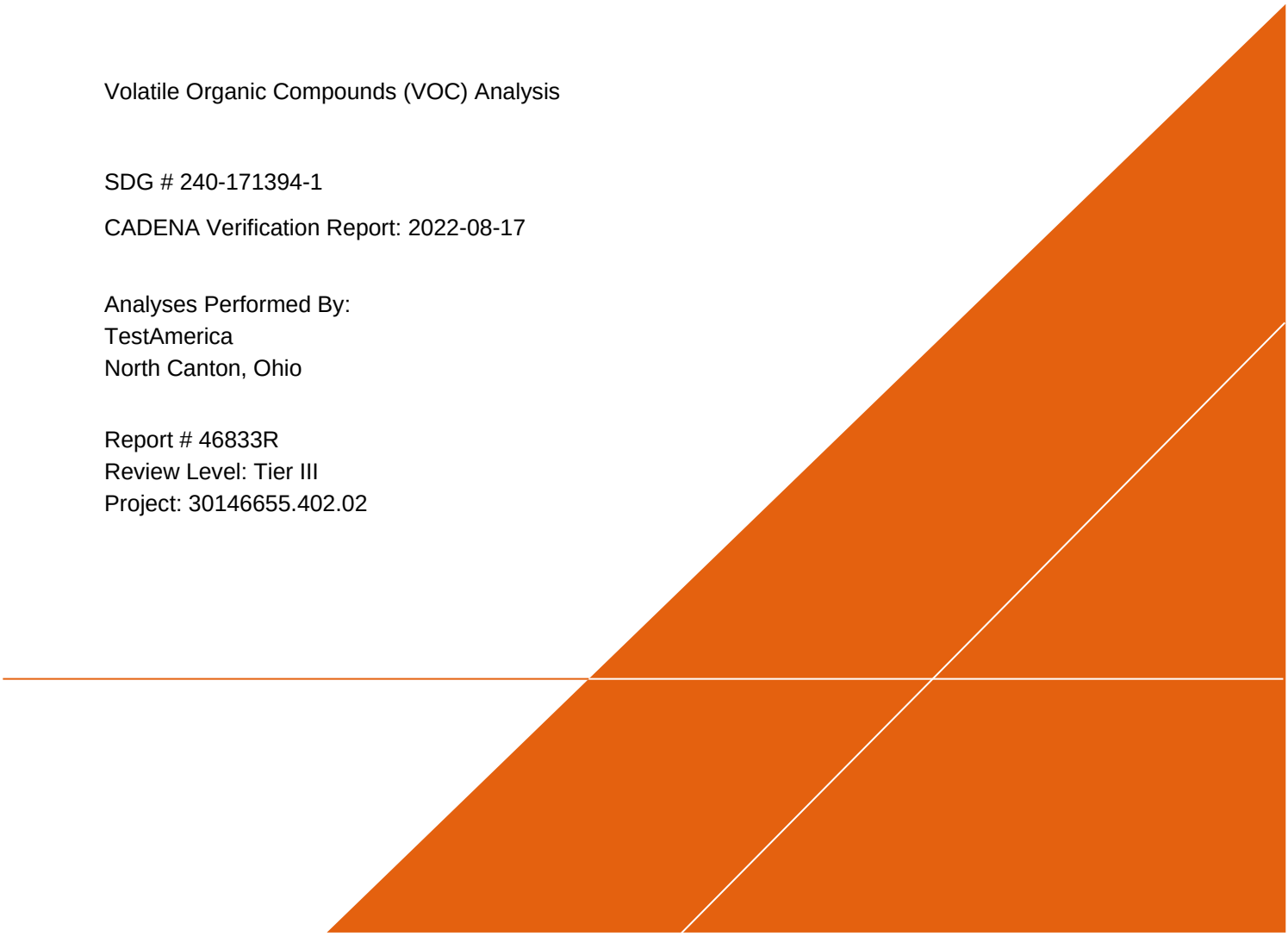
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171394-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46833R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171394-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_70	240-171394-1	Water	08/09/22		X	
MW-179S_080922	240-171394-2	Water	08/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 21, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_70	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1795_080922	8/9/22	1232		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171394 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34870 WADSWORTH

Submit all results through Cadena at jtomalia@cadenaco.com Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/9/22 1535	NOVI COLD STORAGE	ARCADIS	8/9/22 1535
	ARCADIS	8/10/22 0935		EEA	8/10/22 0935
	EEA	8/10/22 938	Received in Laboratory by:	EENC	8-11-22 930

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Client Sample ID: TRIP BLANK_70

Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171394-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 12:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 12:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 12:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*08/15/22 12:41*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/15/22 12:41*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/15/22 12:41*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*08/15/22 12:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171394-1

Client Sample ID: MW-179S_080922
Date Collected: 08/09/22 12:32
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171394-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 06:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/13/22 06:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 13:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 13:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 13:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/15/22 13:29*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/15/22 13:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/15/22 13:29*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/15/22 13:29*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171301-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 1:50:01 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Job ID: 240-171301-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171301-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171301-1	TRIP BLANK_63	Water	08/08/22 00:00	08/10/22 13:17
240-171301-2	MW-180SR_080822	Water	08/08/22 13:50	08/10/22 13:17

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Client Sample ID: TRIP BLANK_63 — Lab Sample ID: 240-171301-1

No Detections.

Client Sample ID: MW-180SR_080822 — Lab Sample ID: 240-171301-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Client Sample ID: TRIP BLANK_63
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:17

Lab Sample ID: 240-171301-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/11/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/11/22 19:52*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/11/22 19:52*	*1*
Dibromofluoromethane (Surr)	*118*		*73 - 120*		*08/11/22 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Client Sample ID: MW-180SR_080822
Date Collected: 08/08/22 13:50
Date Received: 08/10/22 13:17

Lab Sample ID: 240-171301-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 05:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/13/22 05:10*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*08/11/22 20:16*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/11/22 20:16*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 20:16*	*1*
Dibromofluoromethane (Surr)	*120*		*73 - 120*		*08/11/22 20:16*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171299-B-3 MSD	Matrix Spike Duplicate	96	116	115	99
240-171299-E-3 MS	Matrix Spike	99	117	118	103
240-171301-1	TRIP BLANK_63	114	103	109	118
240-171301-2	MW-180SR_080822	115	103	110	120
LCS 240-538478/5	Lab Control Sample	95	119	117	101
MB 240-538478/8	Method Blank	110	105	110	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171299-I-3 MS	Matrix Spike	91
240-171299-O-3 MSD	Matrix Spike Duplicate	90
240-171301-2	MW-180SR_080822	88
LCS 240-538760/3	Lab Control Sample	89
MB 240-538760/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538478/8
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 13:02*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 13:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 13:02*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 13:02*	*1*

Lab Sample ID: LCS 240-538478/5
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.8		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	21.8		ug/L		109	76 - 123
trans-1,2-Dichloroethene	20.0	20.5		ug/L		103	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*119*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171299-E-3 MS
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	17.1		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*117*		*56 - 136*
Toluene-d8 (Surr)	*118*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538760/4
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 21:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 21:10*	*1*

Lab Sample ID: LCS 240-538760/3
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171299-I-3 MS
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.99		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171299-O-3 MSD
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.83		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

GC/MS VOA

Analysis Batch: 538478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171301-1	TRIP BLANK_63	Total/NA	Water	8260D	
240-171301-2	MW-180SR_080822	Total/NA	Water	8260D	
MB 240-538478/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538478/5	Lab Control Sample	Total/NA	Water	8260D	
240-171299-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171299-E-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 538760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171301-2	MW-180SR_080822	Total/NA	Water	8260D SIM	
MB 240-538760/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538760/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171299-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171299-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Client Sample ID: TRIP BLANK_63

Lab Sample ID: 240-171301-1

Date Collected: 08/08/22 00:00

Matrix: Water

Date Received: 08/10/22 13:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 19:52

Client Sample ID: MW-180SR_080822

Lab Sample ID: 240-171301-2

Date Collected: 08/08/22 13:50

Matrix: Water

Date Received: 08/10/22 13:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 20:16
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 05:10

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 63	8/8/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-180SR_080822	8/8/22	1350		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171301 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34891 Wadsworth St. side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/8/22 1425	NOVI COLD STORAGE	ARCADIS	08/8/22 1425
[signature]	Arcadis	8/9/22 1410	[signature]	EETA	8/9/22 1411
[signature]	EETA	8/9/22 1446	Received in Laboratory by: [signature]	EETA	8-10-22 930

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # T4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171301-1
Sample date: 2022-08-08
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171301-1

		Sample Name:	TRIP BLANK_63				MW-180SR_080822			
		Lab Sample ID:	2401713011				2401713012			
		Sample Date:	8/8/2022				8/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

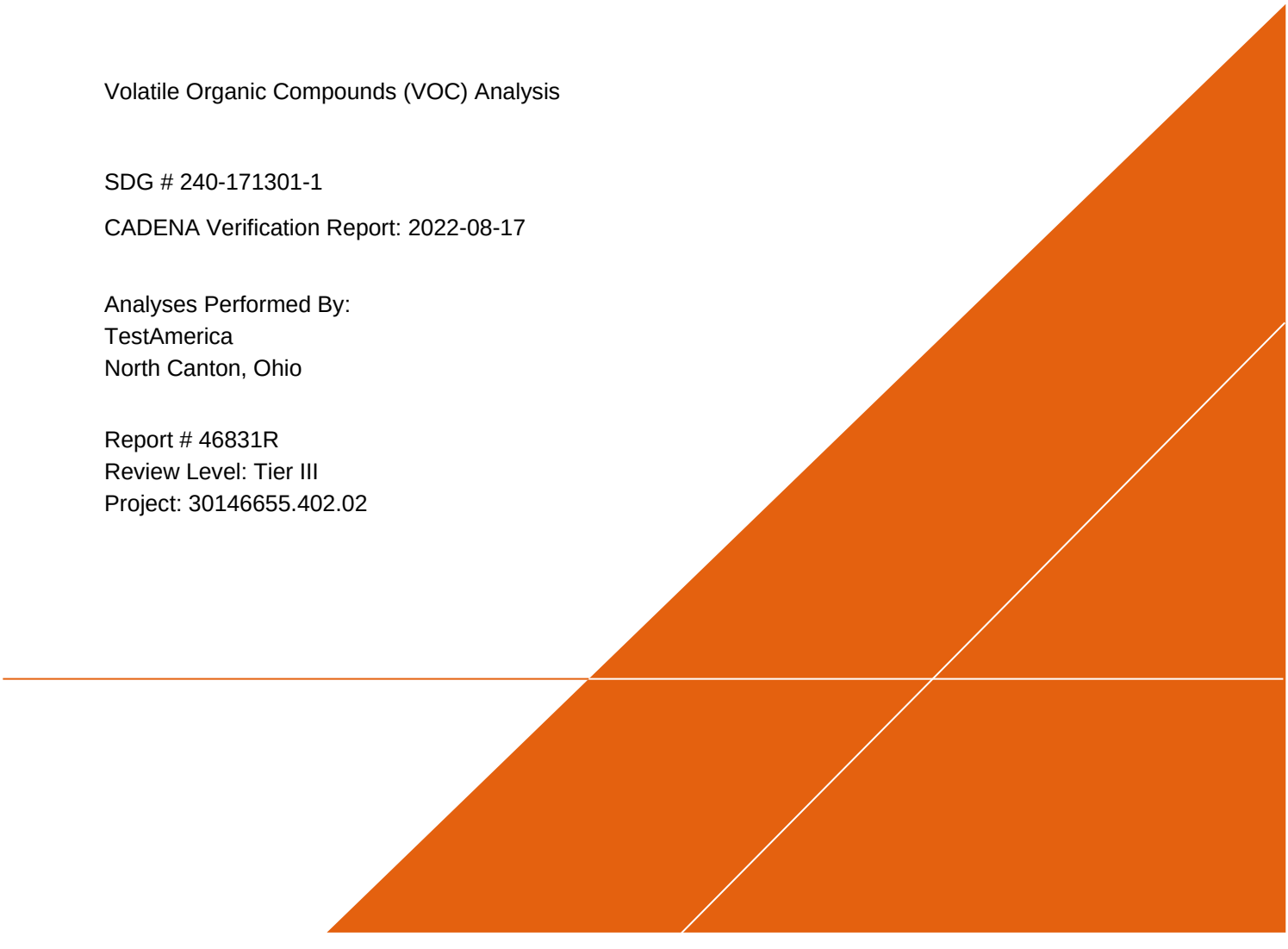
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171301-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46831R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171301-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_63	240-171301-1	Water	08/08/22		X	
MW-180SR_080822	240-171301-2	Water	08/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 63	8/8/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-180SR_080822	8/8/22	1350		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171301 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34891 Wadsworth St. side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/8/22 1425	NOVI COLD STORAGE	ARCADIS	08/8/22 1425
[signature]	Arcadis	8/9/22 1410	[signature]	EETA	8/9/22 1411
[signature]	EETA	8/9/22 1446	Received in Laboratory by: [signature]	EETA	8-10-22 930

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Client Sample ID: TRIP BLANK_63
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:17

Lab Sample ID: 240-171301-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/11/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/11/22 19:52*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/11/22 19:52*	*1*
Dibromofluoromethane (Surr)	*118*		*73 - 120*		*08/11/22 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171301-1

Client Sample ID: MW-180SR_080822
Date Collected: 08/08/22 13:50
Date Received: 08/10/22 13:17

Lab Sample ID: 240-171301-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 05:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/13/22 05:10*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*62 - 137*		*08/11/22 20:16*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/11/22 20:16*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 20:16*	*1*
Dibromofluoromethane (Surr)	*120*		*73 - 120*		*08/11/22 20:16*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170981-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/18/2022 8:14:10 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Job ID: 240-170981-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170981-1

Comments
No additional comments.

Receipt
The samples were received on 8/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4° C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170981-1	TRIP BLANK_35	Water	08/02/22 00:00	08/04/22 09:40
240-170981-2	MW-104S_080222	Water	08/02/22 13:25	08/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Client Sample ID: TRIP BLANK_35 — Lab Sample ID: 240-170981-1

No Detections.

Client Sample ID: MW-104S_080222 — Lab Sample ID: 240-170981-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Client Sample ID: TRIP BLANK_35

Date Collected: 08/02/22 00:00
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170981-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/08/22 16:14*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/08/22 16:14*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 16:14*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/08/22 16:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Client Sample ID: MW-104S_080222

Date Collected: 08/02/22 13:25
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170981-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*08/09/22 16:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 19:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 19:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 19:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/08/22 19:48*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/08/22 19:48*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/08/22 19:48*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/08/22 19:48*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170809-B-16 MS	Matrix Spike	87	91	96	96
240-170809-B-16 MSD	Matrix Spike Duplicate	86	90	93	93
240-170981-1	TRIP BLANK_35	100	93	98	105
240-170981-2	MW-104S_080222	96	88	95	101
LCS 240-537897/5	Lab Control Sample	93	94	100	101
MB 240-537897/10	Method Blank	95	91	96	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170981-2	MW-104S_080222	96
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537897/10
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 13:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/08/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 13:52*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/08/22 13:52*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/08/22 13:52*	*1*

Lab Sample ID: LCS 240-537897/5
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.7		ug/L		99	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	28.8		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	24.4		ug/L		97	75 - 124
Trichloroethene	25.0	26.8		ug/L		107	70 - 122
Vinyl chloride	25.0	23.1		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	130	U	3130	2900		ug/L		93	56 - 135
cis-1,2-Dichloroethene	4300		3130	7080		ug/L		89	66 - 128
Tetrachloroethene	1700		3130	4890		ug/L		101	62 - 131
trans-1,2-Dichloroethene	130	U	3130	2850		ug/L		91	56 - 136
Trichloroethene	410		3130	3530		ug/L		100	61 - 124
Vinyl chloride	1400		3130	3900		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-170809-B-16 MSD
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 135	3	26
cis-1,2-Dichloroethene	4300		3130	6860		ug/L		82	66 - 128	3	14
Tetrachloroethene	1700		3130	4670		ug/L		94	62 - 131	5	20
trans-1,2-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 136	1	15
Trichloroethene	410		3130	3390		ug/L		95	61 - 124	4	15
Vinyl chloride	1400		3130	3880		ug/L		81	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

GC/MS VOA

Analysis Batch: 537897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170981-1	TRIP BLANK_35	Total/NA	Water	8260D	
240-170981-2	MW-104S_080222	Total/NA	Water	8260D	
MB 240-537897/10	Method Blank	Total/NA	Water	8260D	
LCS 240-537897/5	Lab Control Sample	Total/NA	Water	8260D	
240-170809-B-16 MS	Matrix Spike	Total/NA	Water	8260D	
240-170809-B-16 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170981-2	MW-104S_080222	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Client Sample ID: TRIP BLANK_35

Lab Sample ID: 240-170981-1

Date Collected: 08/02/22 00:00

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 16:14

Client Sample ID: MW-104S_080222

Lab Sample ID: 240-170981-2

Date Collected: 08/02/22 13:25

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 19:48
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 16:49

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170981-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_35	—	—		1						1					N	G	X	X	X	X	X	X	X (EW)	1 Trip Blank
MW-104S-080222	08/02/22	1325		6						6					N	G	X	X	X	X	X	XX	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170981 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34900 Standish

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	08/02/22 1430	NOVI COLD STORAGE	ARCADIS	08/02/22 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/3/22 1145	[illegible]	CETA	8/3/22 1146
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	CETA	8/3/22 1150	[illegible]	EBTNC	8-4-22 940

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8/18/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 170981**
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Nancy Vega

Cooler Received on 8-4-22 Opened on 8-4-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170981-1
Sample date: 2022-08-02
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170981-1

		Sample Name:	TRIP BLANK_35				MW-104S_080222			
		Lab Sample ID:	2401709811				2401709812			
		Sample Date:	8/2/2022				8/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

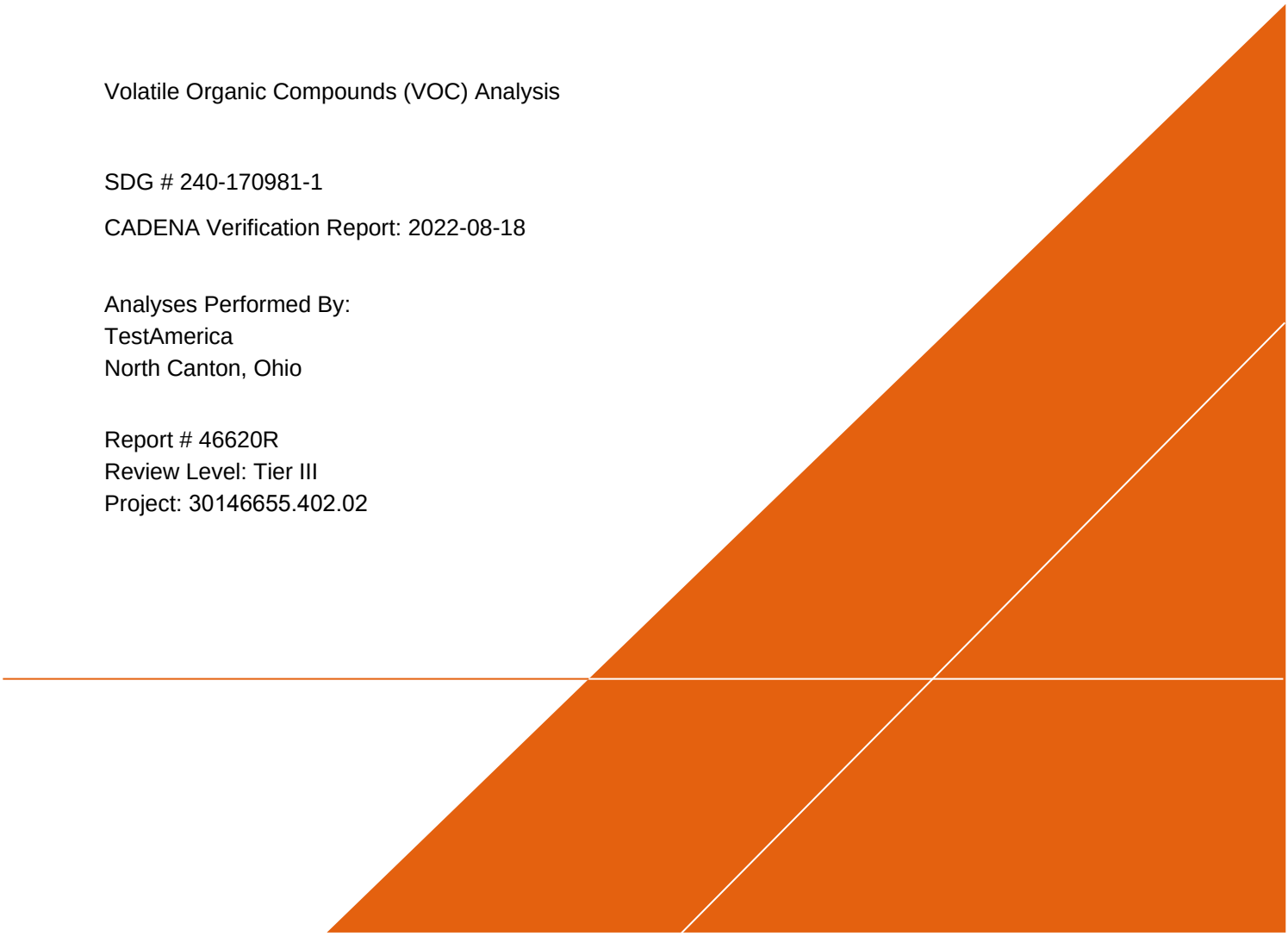
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170981-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46620R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170981-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_35	240-170981-1	Water	08/02/22		X	
MW-104S_080222	240-170981-2	Water	08/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_35	—	—		1						1					N	G	X	X	X	X	X	X	X (FW)	1 Trip Blank
MW-104S-080222	08/02/22	1325		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170981 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34900 Standish

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by: Lottie Jay	ARCADIS	08/02/22 1430	Received by: NOVI COLD STORAGE	ARCADIS	08/02/22 1430
Relinquished by: [signature]	Arcadis	8/3/22 1145	Received by: [signature]	EETA	8/3/22 1146
Relinquished by: [signature]	EETA	8/3/22 1150	Received in Laboratory by: [signature]	EET NC	8-4-22 940

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08/18/2022

Client Sample ID: TRIP BLANK_35
Lab Sample ID: 240-170981-1
Date Collected: 08/02/22 00:00
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/08/22 16:14*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/08/22 16:14*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 16:14*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/08/22 16:14*	*1*

Client Sample ID: MW-104S_080222
Lab Sample ID: 240-170981-2
Date Collected: 08/02/22 13:25
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*		*08/09/22 16:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 19:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 19:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 19:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/08/22 19:48*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/08/22 19:48*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/08/22 19:48*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/08/22 19:48*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171035-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:30:01 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Job ID: 240-171035-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171035-1

Comments
No additional comments.

Receipt
The samples were received on 8/5/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7º C.

GC/MS VOA
Method 8260D: The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK_44 (240-171035-1) and MW-159S_080322 (240-171035-2) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171035-1	TRIP BLANK_44	Water	08/03/22 00:00	08/05/22 09:50
240-171035-2	MW-159S_080322	Water	08/03/22 11:15	08/05/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Client Sample ID: TRIP BLANK_44 — Lab Sample ID: 240-171035-1

No Detections.

Client Sample ID: MW-159S_080322 — Lab Sample ID: 240-171035-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Client Sample ID: TRIP BLANK_44
Date Collected: 08/03/22 00:00
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171035-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 16:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 16:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 16:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 16:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/09/22 16:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 16:22*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 16:22*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/09/22 16:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Client Sample ID: MW-159S_080322
Date Collected: 08/03/22 11:15
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171035-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 19:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 19:12*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/09/22 16:45*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*08/09/22 16:45*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/09/22 16:45*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/09/22 16:45*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171035-1	TRIP BLANK_44	103	87	93	111
240-171035-2	MW-159S_080322	99	81	87	107
LCS 240-538105/5	Lab Control Sample	96	94	92	107
MB 240-538105/8	Method Blank	101	92	93	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171035-2	MW-159S_080322	85
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538105/8
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 12:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/09/22 12:58*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 12:58*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/09/22 12:58*	*1*

Lab Sample ID: LCS 240-538105/5
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	20.0	19.3		ug/L		97	77 - 123
Tetrachloroethene	20.0	21.3		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	18.2		ug/L		91	75 - 124
Trichloroethene	20.0	20.5		ug/L		103	70 - 122
Vinyl chloride	20.0	18.1		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

GC/MS VOA

Analysis Batch: 538105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171035-1	TRIP BLANK_44	Total/NA	Water	8260D	
240-171035-2	MW-159S_080322	Total/NA	Water	8260D	
MB 240-538105/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538105/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171035-2	MW-159S_080322	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Client Sample ID: TRIP BLANK_44

Lab Sample ID: 240-171035-1

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 16:22

Client Sample ID: MW-159S_080322

Lab Sample ID: 240-171035-2

Date Collected: 08/03/22 11:15

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 16:45
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 19:12

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171035-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_44	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1595_080322	8/3/22	1115		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: [redacted] 34920 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/3/22 1515	Novi Cold Storage	Arcadis	8/3/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/4/22 1250	[signature]	EEXA	8/4/22
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEXA	8/4/22	[signature]	[illegible]	8-5-22 9:50

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171035
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Marilyn Blee

Cooler Received on 8-5-22 Opened on 8-5-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____	Yes	No	
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No	NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No	
-Were tamper/custody seals intact and uncompromised?	Yes	No	NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No	
4. Did custody papers accompany the sample(s)?	Yes	No	
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No	
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?			
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No	
11. Sufficient quantity received to perform indicated analyses?	Yes	No	
12. Are these work share samples and all listed on the COC?	Yes	No	
If yes, Questions 13-17 have been checked at the originating laboratory.			
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No	NA
14. Were VOAs on the COC?	Yes	No	
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No	

pH Strip Lot# **HC286797**

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171035-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171035-1

		Sample Name:	TRIP BLANK_44				MW-159S_080322			
		Lab Sample ID:	2401710351				2401710352			
		Sample Date:	8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

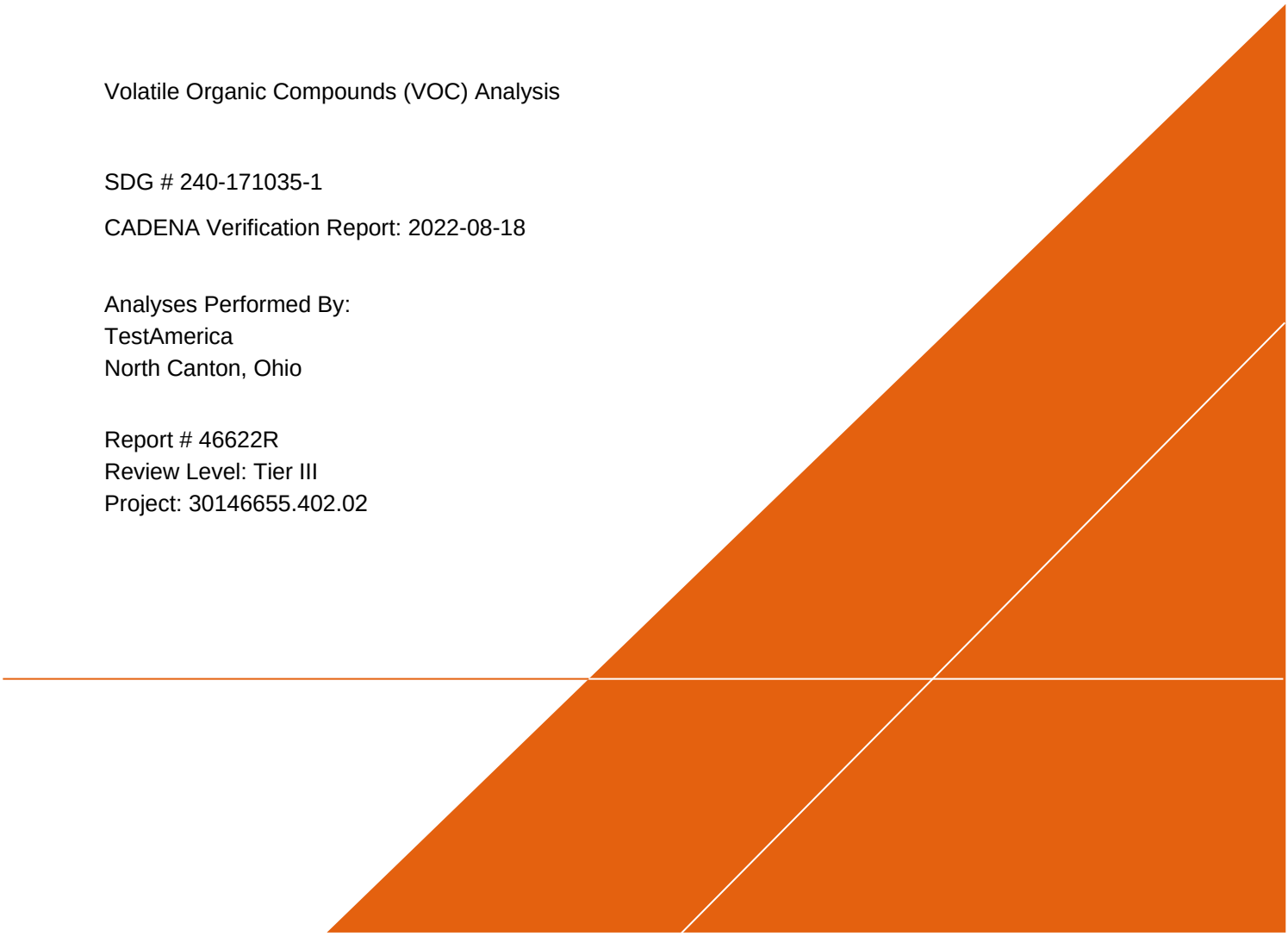
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171035-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46622R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171035-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_44	240-171035-1	Water	08/03/22		X	
MW-159S_080322	240-171035-2	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_44	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1595_080322	8/3/22	1115		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171035 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: [redacted] 34920 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/3/22 1515	Novi Cold Storage	Arcadis	8/3/22 1515
[signature]	Arcadis	8/4/22 1250	[signature]	EEXA	8/4/22
[signature]	EEXA	8/4/22	[signature]	[signature]	8-5-22 9:5[illegible]

Received in Laboratory by: [signature]

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Client Sample ID: TRIP BLANK_44
Lab Sample ID: 240-171035-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 16:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 16:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 16:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 16:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/09/22 16:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 16:22*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 16:22*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*08/09/22 16:22*	*1*

Client Sample ID: MW-159S_080322
Lab Sample ID: 240-171035-2
Date Collected: 08/03/22 11:15
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 19:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 19:12*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 16:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 16:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 16:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 16:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/09/22 16:45*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*08/09/22 16:45*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/09/22 16:45*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/09/22 16:45*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171036-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:30:32 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Job ID: 240-171036-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171036-1

Comments
No additional comments.

Receipt
The samples were received on 8/5/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7º C.

GC/MS VOA
Method 8260D: The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK_45 (240-171036-1) and MW-185S_080322 (240-171036-2) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171036-1	TRIP BLANK_45	Water	08/03/22 00:00	08/05/22 09:50
240-171036-2	MW-185S_080322	Water	08/03/22 12:50	08/05/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Client Sample ID: TRIP BLANK_45 — Lab Sample ID: 240-171036-1

No Detections.

Client Sample ID: MW-185S_080322 — Lab Sample ID: 240-171036-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Client Sample ID: TRIP BLANK_45
Date Collected: 08/03/22 00:00
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171036-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 17:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 17:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 17:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 17:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 17:09*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 17:09*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/09/22 17:09*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/09/22 17:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Client Sample ID: MW-185S_080322
Date Collected: 08/03/22 12:50
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171036-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/09/22 19:35*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 17:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 17:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 17:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/09/22 17:32*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/09/22 17:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/09/22 17:32*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/09/22 17:32*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171036-1	TRIP BLANK_45	101	87	90	109
240-171036-2	MW-185S_080322	100	83	91	108
LCS 240-538105/5	Lab Control Sample	96	94	92	107
MB 240-538105/8	Method Blank	101	92	93	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171036-2	MW-185S_080322	83
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538105/8
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 12:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/09/22 12:58*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 12:58*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/09/22 12:58*	*1*

Lab Sample ID: LCS 240-538105/5
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	20.0	19.3		ug/L		97	77 - 123
Tetrachloroethene	20.0	21.3		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	18.2		ug/L		91	75 - 124
Trichloroethene	20.0	20.5		ug/L		103	70 - 122
Vinyl chloride	20.0	18.1		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

GC/MS VOA

Analysis Batch: 538105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171036-1	TRIP BLANK_45	Total/NA	Water	8260D	
240-171036-2	MW-185S_080322	Total/NA	Water	8260D	
MB 240-538105/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538105/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171036-2	MW-185S_080322	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Client Sample ID: TRIP BLANK_45

Lab Sample ID: 240-171036-1

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 17:09

Client Sample ID: MW-185S_080322

Lab Sample ID: 240-171036-2

Date Collected: 08/03/22 12:50

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 17:32
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 19:35

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171036-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_45	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-185S_080322	8/3/22	1250		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171036 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34921 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	8/3/22 1515	Received by: Novi Cold Storage	Arcadis	8/3/22 1515
Relinquished by:	Arcadis	8/4/22 1250	Received by:	EFSA	8/4/22
Relinquished by:	EFSA	8/4/22	Received in Laboratory by:	TAL	8-5-22 9:50

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171036
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-5-22 Opened on 8-5-22

Cooler unpacked by: Marilyn Blee

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171036-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171036-1

		Sample Name:	TRIP BLANK_45				MW-185S_080322			
		Lab Sample ID:	2401710361				2401710362			
		Sample Date:	8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

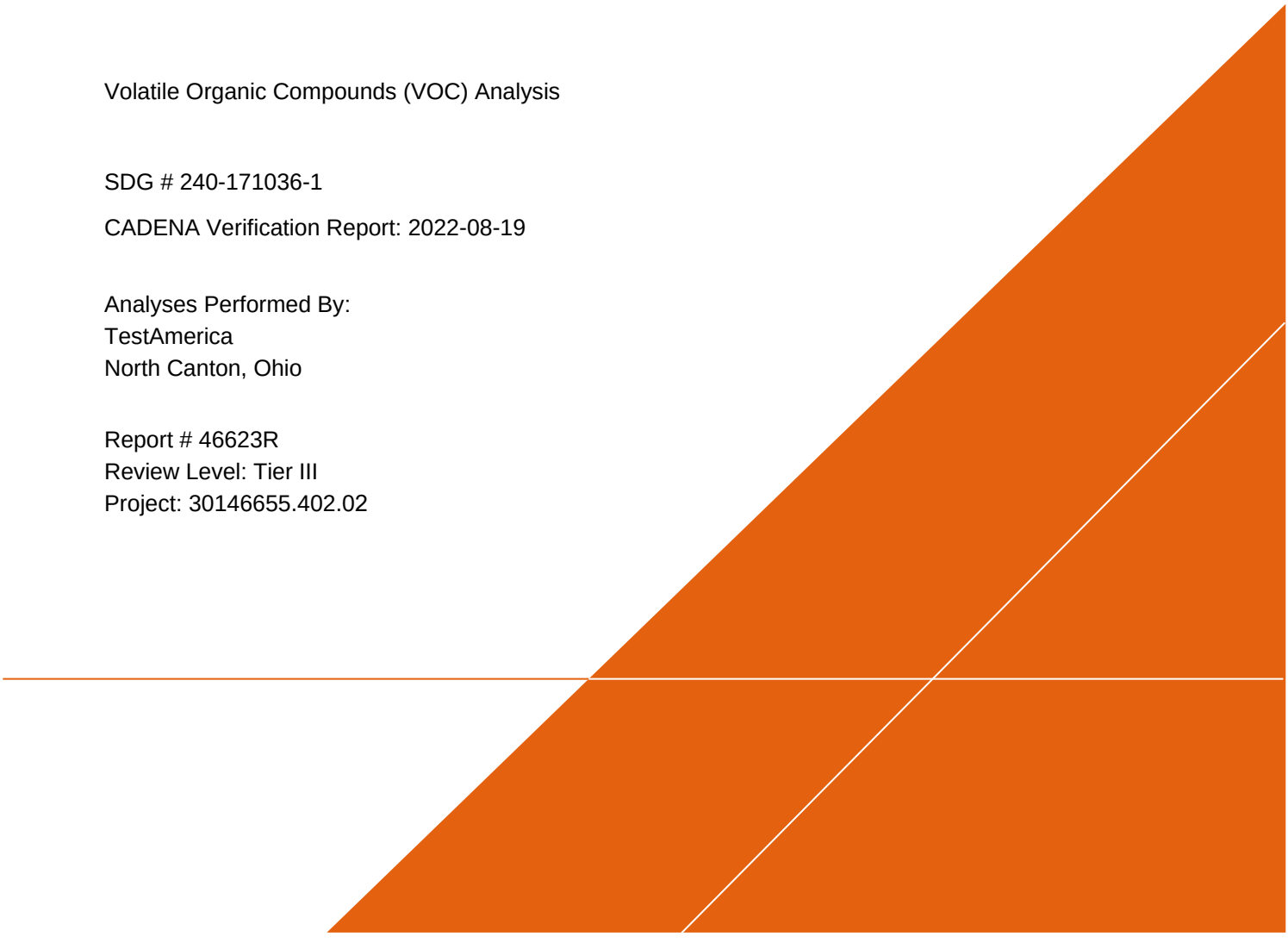
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171036-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46623R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171036-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_45	240-171036-1	Water	08/03/22		X	
MW-185S_080322	240-171036-2	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_45	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1855_080322	8/3/22	1250		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171036 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34921 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Sommer Guy	Arcadis	8/3/22 1515	Novi Cold Storage	Arcadis	8/3/22 1515
Relinquished by:	Arcadis	8/4/22 1250		EFNA	8/4/22
Relinquished by:	EFNA	8/4/22	Received in Laboratory by:		8-5-22 9:50

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08/19/2022

Client Sample ID: TRIP BLANK_45
Lab Sample ID: 240-171036-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 17:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 17:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 17:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 17:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 17:09*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 17:09*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/09/22 17:09*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/09/22 17:09*	*1*

Client Sample ID: MW-185S_080322
Lab Sample ID: 240-171036-2
Date Collected: 08/03/22 12:50
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/09/22 19:35*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 17:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 17:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 17:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/09/22 17:32*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/09/22 17:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/09/22 17:32*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/09/22 17:32*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170889-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:46:11 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Job ID: 240-170889-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170889-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170889-1	TRIP BLANK_36	Water	08/01/22 00:00	08/03/22 09:45
240-170889-2	MW-183S_080122	Water	08/01/22 13:15	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Client Sample ID: TRIP BLANK_36 — Lab Sample ID: 240-170889-1

No Detections.

Client Sample ID: MW-183S_080122 — Lab Sample ID: 240-170889-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Client Sample ID: TRIP BLANK_36

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170889-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 14:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 14:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 14:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/05/22 14:49*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/05/22 14:49*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 14:49*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 14:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Client Sample ID: MW-183S_080122
Date Collected: 08/01/22 13:15
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170889-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 22:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 22:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 16:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 16:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 16:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 16:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/05/22 16:54*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/05/22 16:54*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 16:54*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/05/22 16:54*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170889-1	TRIP BLANK_36	98	85	96	101
240-170889-2	MW-183S_080122	98	87	96	103
240-170891-A-2 MS	Matrix Spike	94	98	98	100
240-170891-C-2 MSD	Matrix Spike Duplicate	94	102	99	99
LCS 240-537713/4	Lab Control Sample	93	96	99	100
MB 240-537713/7	Method Blank	97	88	96	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170886-F-2 MS	Matrix Spike	80
240-170886-F-2 MSD	Matrix Spike Duplicate	83
240-170889-2	MW-183S_080122	82
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537713/7
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:09*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 13:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 13:09*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:09*	*1*

Lab Sample ID: LCS 240-537713/4
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.4		ug/L		113	63 - 134
cis-1,2-Dichloroethene	25.0	25.6		ug/L		102	77 - 123
Tetrachloroethene	25.0	27.3		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122
Vinyl chloride	12.5	9.78		ug/L		78	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	17.3		ug/L		69	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	18.0		ug/L		72	66 - 128
Tetrachloroethene	1.0	U F1	25.0	12.8	F1	ug/L		51	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	16.9		ug/L		68	56 - 136
Trichloroethene	1.0	U F1	25.0	14.4	F1	ug/L		57	61 - 124
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170891-A-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-C-2 MSD
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	19.0		ug/L		76	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	25.0	18.5		ug/L		74	66 - 128	3	14
Tetrachloroethene	1.0	U F1	25.0	14.8	F1	ug/L		59	62 - 131	15	20
trans-1,2-Dichloroethene	1.0	U	25.0	17.9		ug/L		71	56 - 136	6	15
Trichloroethene	1.0	U F1	25.0	15.5		ug/L		62	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	15.5		ug/L		124	43 - 157	24	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

GC/MS VOA

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170889-2	MW-183S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-170886-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 537713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170889-1	TRIP BLANK_36	Total/NA	Water	8260D	
240-170889-2	MW-183S_080122	Total/NA	Water	8260D	
MB 240-537713/7	Method Blank	Total/NA	Water	8260D	
LCS 240-537713/4	Lab Control Sample	Total/NA	Water	8260D	
240-170891-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-170891-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Client Sample ID: TRIP BLANK_36

Lab Sample ID: 240-170889-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 14:49	SAM	EETNC CAN

Client Sample ID: MW-183S_080122

Lab Sample ID: 240-170889-2

Date Collected: 08/01/22 13:15

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537713	08/05/22 16:54	SAM	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 22:14	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170889-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

2.5/2.5

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
b TRIP BLANK_36	—	—		1						1					N	G	X	X	X	X	X	X	X (w)	1 Trip Blank
MW-1835_080122	08/01/22	1315		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170889 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34934 STANDISH

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leacadia Jay	ARCADIS	08/01/22 1512	NOVI COLD STORAGE	ARCADIS	08/01/22 1512
	ARCADIS	8/2/22 947		EET.A	8/2/22 948
Jeri Hall	EET.A	8/2/22 950		EEL	8/3/22 945

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170889

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 170889
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Yes), and sample type of grab/comp (Yes)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 810420 16	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

CK 8.3.22 8.3.22

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 10, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170889-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-10
Number of Samples:2
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers:
GCMS VOC QC batch 537713.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170889-1

		Sample Name:	TRIP BLANK_36				MW-183S_080122			
		Lab Sample ID:	2401708891				2401708892			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

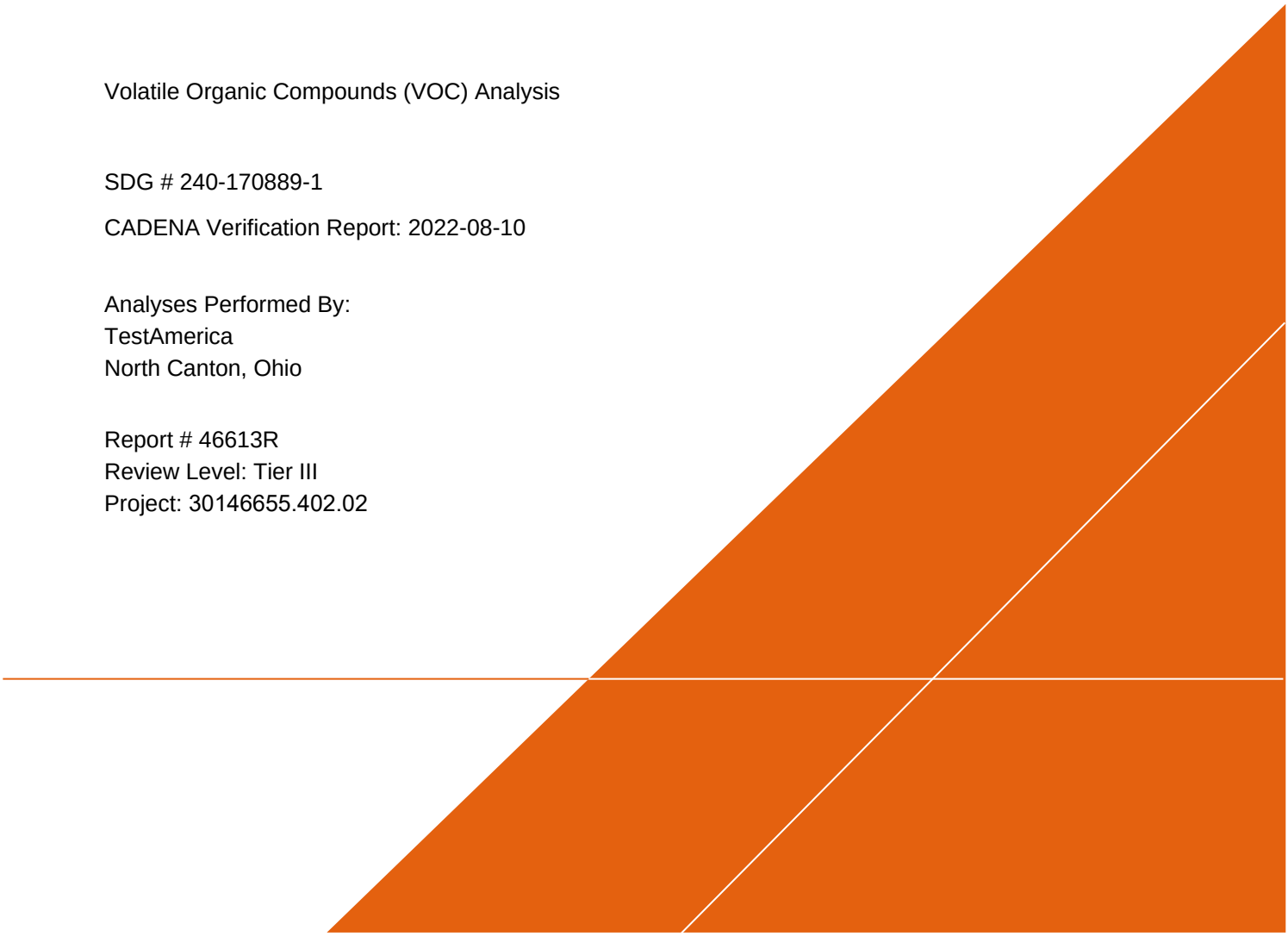
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170889-1

CADENA Verification Report: 2022-08-10

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46613R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170889-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_36	240-170889-1	Water	08/01/22		X	
MW-183S_080122	240-170889-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

2.5/2.5

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

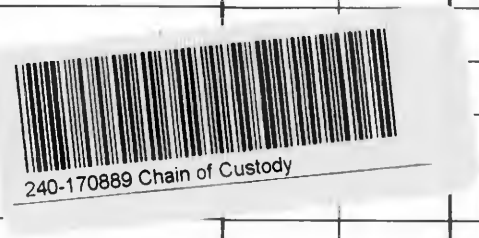
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_36	—	—		1						1					N	G	X	X	X	X	X	X	X (2m)				1 Trip Blank
MW-1835_080122	08/01/22	1315		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34934 STANDISH
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leacader Jay	ARCADIS	08/01/22 1512	NOVI COLD STORAGE	ARCADIS	08/01/22 1512
	ARCADIS	8/2/22 947		EET.A	8/2/22 948
	EET.A	8/2/22 950		EEL	8/2/22 945

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08/09/2022

Client Sample ID: TRIP BLANK_36
Lab Sample ID: 240-170889-1

Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 14:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 14:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 14:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 14:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/05/22 14:49*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/05/22 14:49*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 14:49*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 14:49*	*1*

Client Sample ID: MW-183S_080122
Lab Sample ID: 240-170889-2

Date Collected: 08/01/22 13:15
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 22:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 22:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 16:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 16:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 16:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 16:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 16:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/05/22 16:54*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/05/22 16:54*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 16:54*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/05/22 16:54*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171732-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:17:50 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171732-1	TRIP BLANK_118	Water	08/16/22 00:00	08/18/22 14:08
240-171732-2	MW-112S_081622	Water	08/16/22 10:20	08/18/22 14:08

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Client Sample ID: TRIP BLANK_118 — Lab Sample ID: 240-171732-1

No Detections.

Client Sample ID: MW-112S_081622 — Lab Sample ID: 240-171732-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Client Sample ID: TRIP BLANK_118
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171732-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/19/22 15:29*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/19/22 15:29*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 15:29*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/19/22 15:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Client Sample ID: MW-112S_081622
Date Collected: 08/16/22 10:20
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171732-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 03:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/23/22 03:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/19/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/19/22 18:39*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 18:39*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 18:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171732-1	TRIP BLANK_118	95	96	104	104
240-171732-2	MW-112S_081622	98	99	105	107
240-171736-C-2 MS	Matrix Spike	97	103	105	104
240-171736-F-2 MSD	Matrix Spike Duplicate	96	103	107	103
LCS 240-539547/5	Lab Control Sample	91	102	109	102
MB 240-539547/8	Method Blank	96	98	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
240-171732-2	MW-112S_081622	71
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539547/8
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 15:05*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/19/22 15:05*	*1*

Lab Sample ID: LCS 240-539547/5
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	29.2		ug/L		117	76 - 123
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	21.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	19.9		ug/L		79	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.2		ug/L		81	56 - 136
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-171736-F-2 MSD
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	25.7		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.0		ug/L		88	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157	0	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/22/22 17:51*	*1*

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

GC/MS VOA

Analysis Batch: 539547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171732-1	TRIP BLANK_118	Total/NA	Water	8260D	
240-171732-2	MW-112S_081622	Total/NA	Water	8260D	
MB 240-539547/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539547/5	Lab Control Sample	Total/NA	Water	8260D	
240-171736-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171736-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171732-2	MW-112S_081622	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Client Sample ID: TRIP BLANK_118

Lab Sample ID: 240-171732-1

Date Collected: 08/16/22 00:00

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 15:29

Client Sample ID: MW-112S_081622

Lab Sample ID: 240-171732-2

Date Collected: 08/16/22 10:20

Matrix: Water

Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 18:39
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/23/22 03:01

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171732-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis					
Address: 28550 Cabot Drive, Suite 500		Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240		Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site		Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04		Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_118	8/16/22	—		1						1					N	G	X	X	X	X	X	X	1	1 Trip Blank
MW-112S_081622	8/16/22	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171732 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34935 Wadsworth St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/16/22 1515	NOVI COLDSTORAGE	ARCADIS	8/16/22 1515
[signature]	Arcadis	8/17/22 1005	[signature]	EETA	8/17/22 10:10
[signature]	EETA	8/17/22 1010	[signature]	EETNC	8-18-22 1408

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Ford Livonia
Cooler Received on 8-18-22 Opened on 8-18-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____
Cooler unpacked by: (MR)

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171732

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.6	2.6	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	4.3	4.3	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171732-1
Sample date: 2022-08-16
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-30
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171732-1

		Sample Name:	TRIP BLANK_118				MW-112S_081622			
		Lab Sample ID:	2401717321				2401717322			
		Sample Date:	8/16/2022				8/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

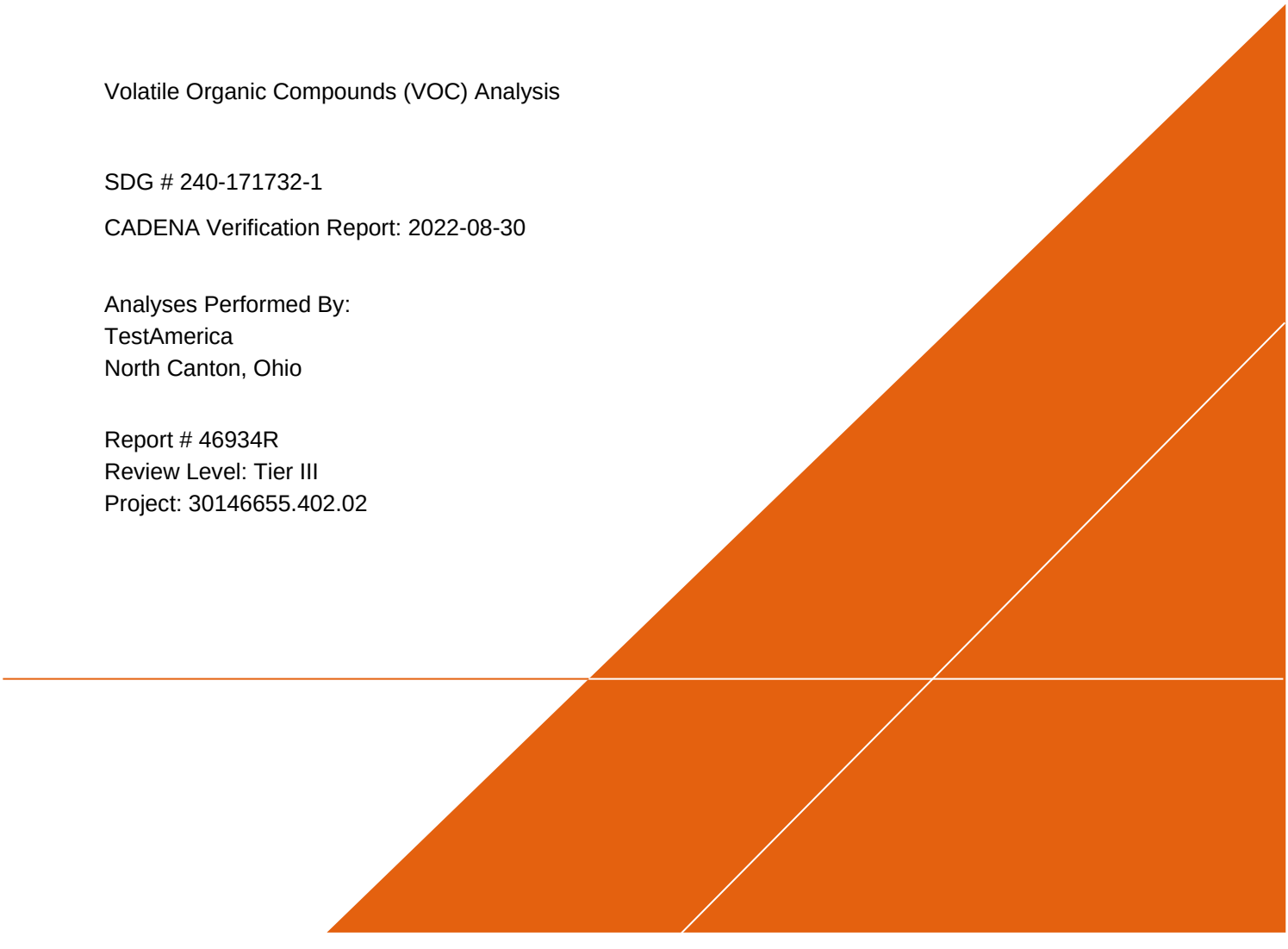
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171732-1

CADENA Verification Report: 2022-08-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46934R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171732-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_118	240-171732-1	Water	08/16/22		X	
MW-112S_081622	240-171732-2	Water	08/16/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_118 MW-112S_081622	Continuous Calibration Verification %D	Tetrachloroethene	+21.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_118	8/16/22	—		1						1					N	G	X	X	X	X	X	X	1	1 Trip Blank
MW-112S_081622	8/16/22	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171732 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34935 Wadsworth St.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/16/22 1515	NOVI COLDSTORAGE	ARCADIS	8/16/22 1515
	Arcadis	8/17/22 1005		EETA	8/17/22 10:10
	EETA	8/17/22 1010	Received in Laboratory by:	EETNC	8-18-22 1408

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Client Sample ID: TRIP BLANK_118
Lab Sample ID: 240-171732-1
Date Collected: 08/16/22 00:00
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/19/22 15:29*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/19/22 15:29*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 15:29*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/19/22 15:29*	*1*

Client Sample ID: MW-112S_081622
Lab Sample ID: 240-171732-2
Date Collected: 08/16/22 10:20
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 03:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/23/22 03:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/19/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/19/22 18:39*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 18:39*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 18:39*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171515-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 10:55:33 AM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Job ID: 240-171515-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171515-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method 8260D: No MS/MSD in batch 538924 due to an incorrect dilution. TRIP BLANK_108 (240-171515-1) and MW-217S_081022 (240-171515-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171515-1	TRIP BLANK_108	Water	08/10/22 00:00	08/13/22 09:45
240-171515-2	MW-217S_081022	Water	08/10/22 11:15	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Client Sample ID: TRIP BLANK_108 — Lab Sample ID: 240-171515-1

No Detections.

Client Sample ID: MW-217S_081022 — Lab Sample ID: 240-171515-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Client Sample ID: TRIP BLANK_108
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171515-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 18:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 18:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 18:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/15/22 18:57*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 18:57*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/15/22 18:57*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 18:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Client Sample ID: MW-217S_081022

Date Collected: 08/10/22 11:15
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171515-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/20/22 16:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 19:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 19:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 19:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 19:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/15/22 19:19*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 19:19*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 19:19*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 19:19*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171515-1	TRIP BLANK_108	111	104	103	103
240-171515-2	MW-217S_081022	112	104	102	103
LCS 240-538924/5	Lab Control Sample	108	107	105	105
MB 240-538924/8	Method Blank	109	104	102	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171515-2	MW-217S_081022	92
240-171515-2 MS	MW-217S_081022	90
240-171515-2 MSD	MW-217S_081022	94
LCS 240-539583/3	Lab Control Sample	93
MB 240-539583/4	Method Blank	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538924/8
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/15/22 15:38*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 15:38*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 15:38*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 15:38*	*1*

Lab Sample ID: LCS 240-538924/5
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.1		ug/L		106	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	20.0		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539583/4
Matrix: Water
Analysis Batch: 539583

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 15:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/20/22 15:55*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-539583/3
Matrix: Water
Analysis Batch: 539583

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*

Lab Sample ID: 240-171515-2 MS
Matrix: Water
Analysis Batch: 539583

Client Sample ID: MW-217S_081022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171515-2 MSD
Matrix: Water
Analysis Batch: 539583

Client Sample ID: MW-217S_081022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

GC/MS VOA

Analysis Batch: 538924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171515-1	TRIP BLANK_108	Total/NA	Water	8260D	
240-171515-2	MW-217S_081022	Total/NA	Water	8260D	
MB 240-538924/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538924/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 539583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171515-2	MW-217S_081022	Total/NA	Water	8260D SIM	
MB 240-539583/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539583/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171515-2 MS	MW-217S_081022	Total/NA	Water	8260D SIM	
240-171515-2 MSD	MW-217S_081022	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Client Sample ID: TRIP BLANK_108

Lab Sample ID: 240-171515-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 18:57

Client Sample ID: MW-217S_081022

Lab Sample ID: 240-171515-2

Date Collected: 08/10/22 11:15

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 19:19
Total/NA	Analysis	8260D SIM		1	539583	SAM	EET CAN	08/20/22 16:45

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

4.0/4.0

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks (✓), 1 week, 2 days, 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_108	8/10/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-217S_081022	8/10/22	1115		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171515 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34935 Wadsworth St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/10/22 1450	NOVI COLD STORAGE	ARCADIS	8/10/22 1450
[signature]	Arcadis	8/12/22 955	[signature]	EEtA	8/12/22 956
[signature]	EEtA	8/12/22 968	[signature]	EETNC	8-13-22 0545

Received in Laboratory by: [signature]

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171515
Barberton Facility

Client Arcadis Site Name Livonia

Cooler Received on 8-13-22 Opened on 8-13-22

Cooler unpacked by: me

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	(Yes)	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.	(me) 8.13.22	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171515-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171515-1

		Sample Name:	TRIP BLANK_108				MW-217S_081022			
		Lab Sample ID:	2401715151				2401715152			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

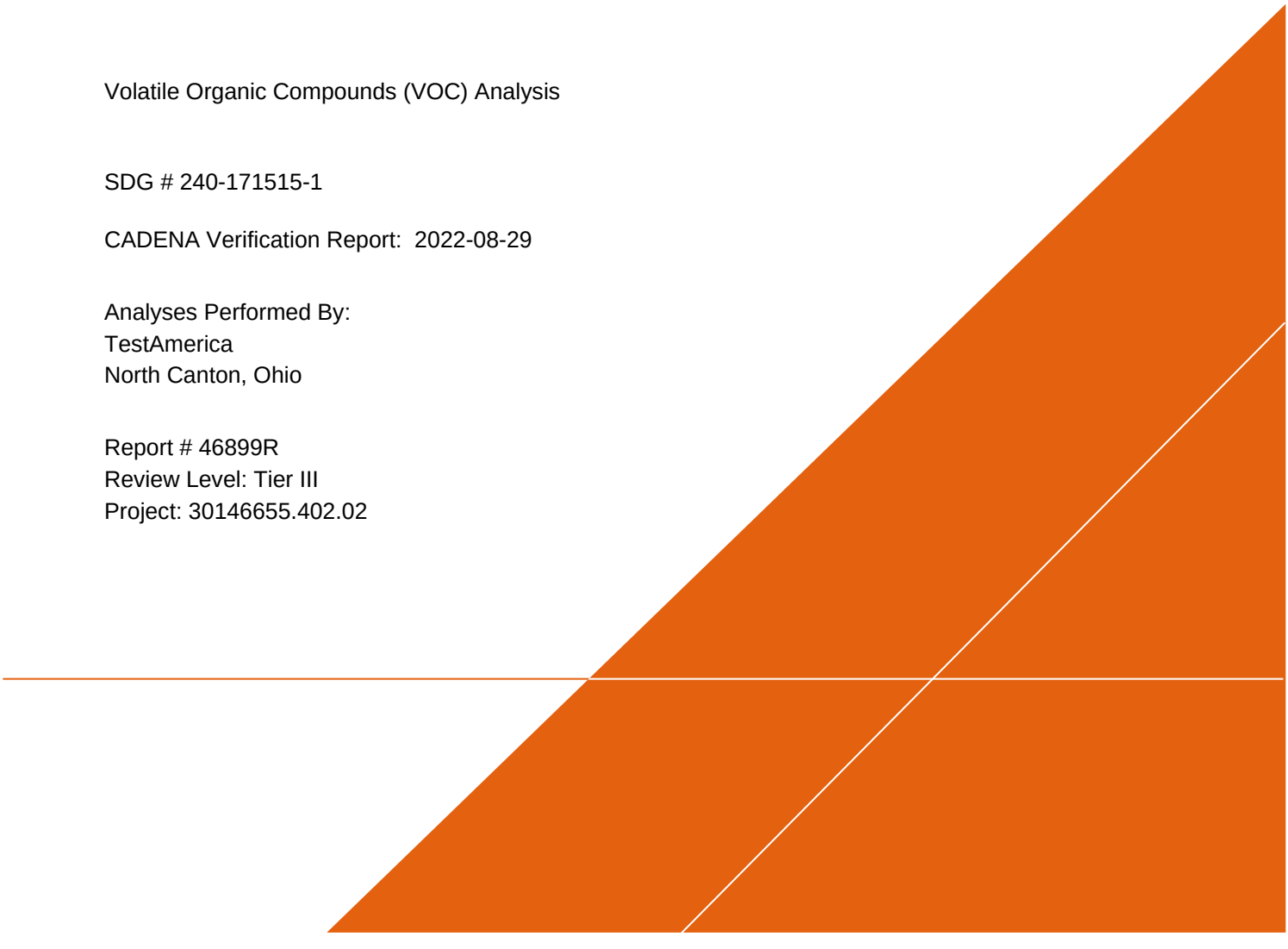
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171515-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46899R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171515-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_108	240-171515-1	Water	08/10/22		X	
MW-217S_081022	240-171515-2	Water	08/10/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 26, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

4.0/4.0

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:					
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783			
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		1 of 1 COCs		
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		For lab use only		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Walk-in client		
Project Number: 30080642.402.04	Shipping/Tracking No:			Lab sampling		
PO # 30080642.402.04				Job/SDG No:		

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_108	8/10/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-217S_081022	8/10/22	1115		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171515 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34935 Wadsworth St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/10/22 1450	NOVI COLD STORAGE	ARCADIS	8/10/22 1450
[signature]	Arcadis	8/12/22 955	[signature]	EETA	8/12/22 956
[signature]	EETA	8/12/22 968	[signature]	EETNC	8-13-22 0545

Received in Laboratory by: [signature]

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8/29/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Client Sample ID: TRIP BLANK_108
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171515-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 18:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 18:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 18:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/15/22 18:57*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 18:57*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/15/22 18:57*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 18:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171515-1

Client Sample ID: MW-217S_081022

Date Collected: 08/10/22 11:15
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171515-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/20/22 16:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 19:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 19:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 19:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 19:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 19:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/15/22 19:19*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 19:19*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 19:19*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 19:19*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171037-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:31:05 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171037-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171037-1

Comments
No additional comments.

Receipt
The samples were received on 8/5/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7º C.

GC/MS VOA
Method 8260D: The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK_43 (240-171037-1) and MW-89S_080322 (240-171037-2) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171037-1	TRIP BLANK_43	Water	08/03/22 00:00	08/05/22 09:50
240-171037-2	MW-89S_080322	Water	08/03/22 09:35	08/05/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Client Sample ID: TRIP BLANK_43 — Lab Sample ID: 240-171037-1

No Detections.

Client Sample ID: MW-89S_080322 — Lab Sample ID: 240-171037-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.82	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	1.4		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Client Sample ID: TRIP BLANK_43

Date Collected: 08/03/22 00:00
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171037-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 17:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 17:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 17:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/09/22 17:55*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 17:55*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/09/22 17:55*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/09/22 17:55*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Client Sample ID: MW-89S_080322

Date Collected: 08/03/22 09:35
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171037-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/09/22 19:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 18:19	1
cis-1,2-Dichloroethene	**0.82**	**J**	1.0	0.46	ug/L			08/09/22 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:19	1
Vinyl chloride	**1.4**		1.0	0.45	ug/L			08/09/22 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/09/22 18:19*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/09/22 18:19*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/09/22 18:19*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/09/22 18:19*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171037-1	TRIP BLANK_43	104	87	92	116
240-171037-2	MW-89S_080322	100	83	90	110
LCS 240-538105/5	Lab Control Sample	96	94	92	107
MB 240-538105/8	Method Blank	101	92	93	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171037-2	MW-89S_080322	81
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538105/8
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 12:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/09/22 12:58*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 12:58*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/09/22 12:58*	*1*

Lab Sample ID: LCS 240-538105/5
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	20.0	19.3		ug/L		97	77 - 123
Tetrachloroethene	20.0	21.3		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	18.2		ug/L		91	75 - 124
Trichloroethene	20.0	20.5		ug/L		103	70 - 122
Vinyl chloride	20.0	18.1		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

GC/MS VOA

Analysis Batch: 538105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171037-1	TRIP BLANK_43	Total/NA	Water	8260D	
240-171037-2	MW-89S_080322	Total/NA	Water	8260D	
MB 240-538105/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538105/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171037-2	MW-89S_080322	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Client Sample ID: TRIP BLANK_43

Lab Sample ID: 240-171037-1

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 17:55

Client Sample ID: MW-89S_080322

Lab Sample ID: 240-171037-2

Date Collected: 08/03/22 09:35

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 18:19
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 19:59

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171037-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

3.7/3.7

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: 3 weeks; 10 day: 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_43	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-89S_080322	8/3/22	0935		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171037 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis NOVA	8/3/22 1515	Received by: Novi Cold Storage	Arcadis	8/3/22 1515
Relinquished by:	Arcadis	8/4/22 1250	Received by:	EEXA	8/4/22
Relinquished by:	EEXA	8/4/22	Received in Laboratory by:	TAL	8-5-22 9:50

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171037
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Marilyn Blee

Cooler Received on 8-5-22 Opened on 8-5-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes	No	
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No	NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No	
-Were tamper/custody seals intact and uncompromised?	Yes	No	NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No	
4. Did custody papers accompany the sample(s)?	Yes	No	
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No	
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?			
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No	
11. Sufficient quantity received to perform indicated analyses?	Yes	No	
12. Are these work share samples and all listed on the COC?	Yes	No	
If yes, Questions 13-17 have been checked at the originating laboratory.			
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No	NA
14. Were VOAs on the COC?	Yes	No	
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No	
17. Was a LL Hg or Me Hg trip blank present?	Yes	No	

pH Strip Lot# HC286797

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171037-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171037-1

		Sample Name:	TRIP BLANK_43				MW-89S_080322			
		Lab Sample ID:	2401710371				2401710372			
		Sample Date:	8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.82	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.4	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

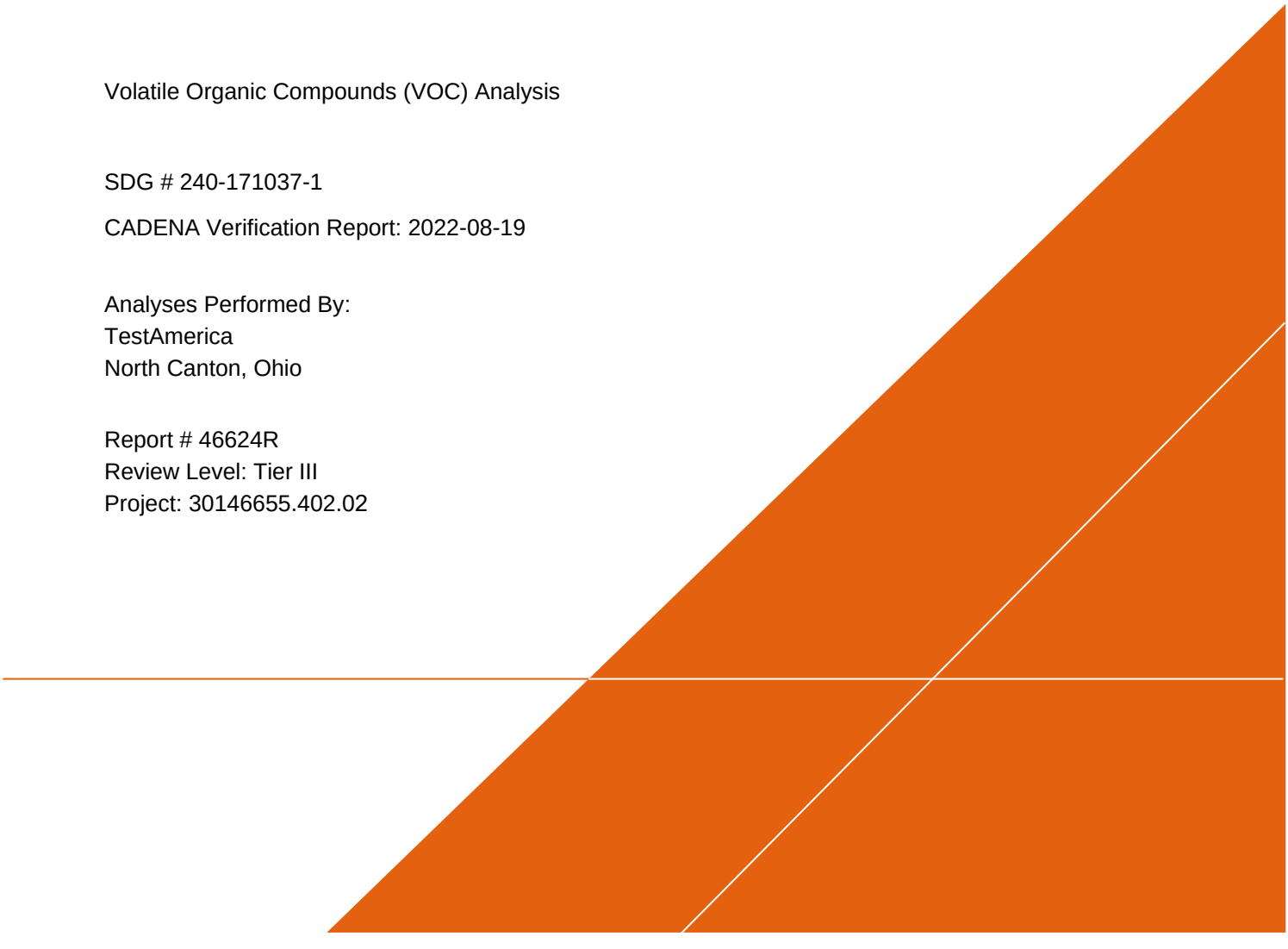
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171037-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46624R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171037-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_43	240-171037-1	Water	08/03/22		X	
MW-89S_080322	240-171037-2	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ☑		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_43	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-89S_080322	8/3/22	0935		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171037 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/3/22 1515	Novi Cold Storage	Arcadis	8/3/22 1515
	Arcadis	8/4/22 1250		EEXA	8/4/22
	EEXA	8/4/22	Pace Analytical Laboratory by:	PACE	8-5-22 9:50

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08/19/2022

Client Sample ID: TRIP BLANK_43
Lab Sample ID: 240-171037-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 17:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 17:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 17:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 17:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/09/22 17:55*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 17:55*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/09/22 17:55*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/09/22 17:55*	*1*

Client Sample ID: MW-89S_080322
Lab Sample ID: 240-171037-2
Date Collected: 08/03/22 09:35
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/09/22 19:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 18:19	1
cis-1,2-Dichloroethene	**0.82**	**J**	1.0	0.46	ug/L			08/09/22 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:19	1
Vinyl chloride	**1.4**		1.0	0.45	ug/L			08/09/22 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/09/22 18:19*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/09/22 18:19*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/09/22 18:19*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/09/22 18:19*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171143-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 2:14:06 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171143-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171143-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-193S_080422 (240-171143-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171143-1	TRIP BLANK_120	Water	08/04/22 00:00	08/06/22 10:00
240-171143-2	MW-193S_080422	Water	08/04/22 10:10	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Client Sample ID: TRIP BLANK_120 — Lab Sample ID: 240-171143-1

No Detections.

Client Sample ID: MW-193S_080422 — Lab Sample ID: 240-171143-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Client Sample ID: TRIP BLANK_120

Lab Sample ID: 240-171143-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 14:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 14:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 14:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 14:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 14:15*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 14:15*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/10/22 14:15*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Client Sample ID: MW-193S_080422

Date Collected: 08/04/22 10:10
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171143-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/10/22 15:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/10/22 18:35*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 18:35*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/10/22 18:35*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/10/22 18:35*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171143-1	TRIP BLANK_120	101	97	104	107
240-171143-2	MW-193S_080422	102	97	105	109
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171143-2	MW-193S_080422	77
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171143-2	MW-193S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171143-1	TRIP BLANK_120	Total/NA	Water	8260D	
240-171143-2	MW-193S_080422	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Client Sample ID: TRIP BLANK_120

Lab Sample ID: 240-171143-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 14:15

Client Sample ID: MW-193S_080422

Lab Sample ID: 240-171143-2

Date Collected: 08/04/22 10:10

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 18:35
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 15:47

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record 45 / 45

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name:	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30080642.402.04	Shipping/Tracking No:		
PO # 30080642.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 120	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-193S_080422	08/04/22	1010		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171143 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Boston Post 3445a side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sinkering	Arcadis	08/04/22 1620	Arcadis Cold Storage	Arcadis	08/04/22 1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000	Jeri Hale	EETA	8/5/22 1001
Relinquished by: Jeri Hale	Company: EETA	Date/Time: 8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171143
Barberton Facility

Client Arcadis Site Name Ford LTP
Cooler Received on 8-6-22 Opened on 8-6-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Cooler unpacked by:

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420166	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171143

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171143-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171143-1

		Sample Name:	TRIP BLANK_120				MW-193S_080422			
		Lab Sample ID:	2401711431				2401711432			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

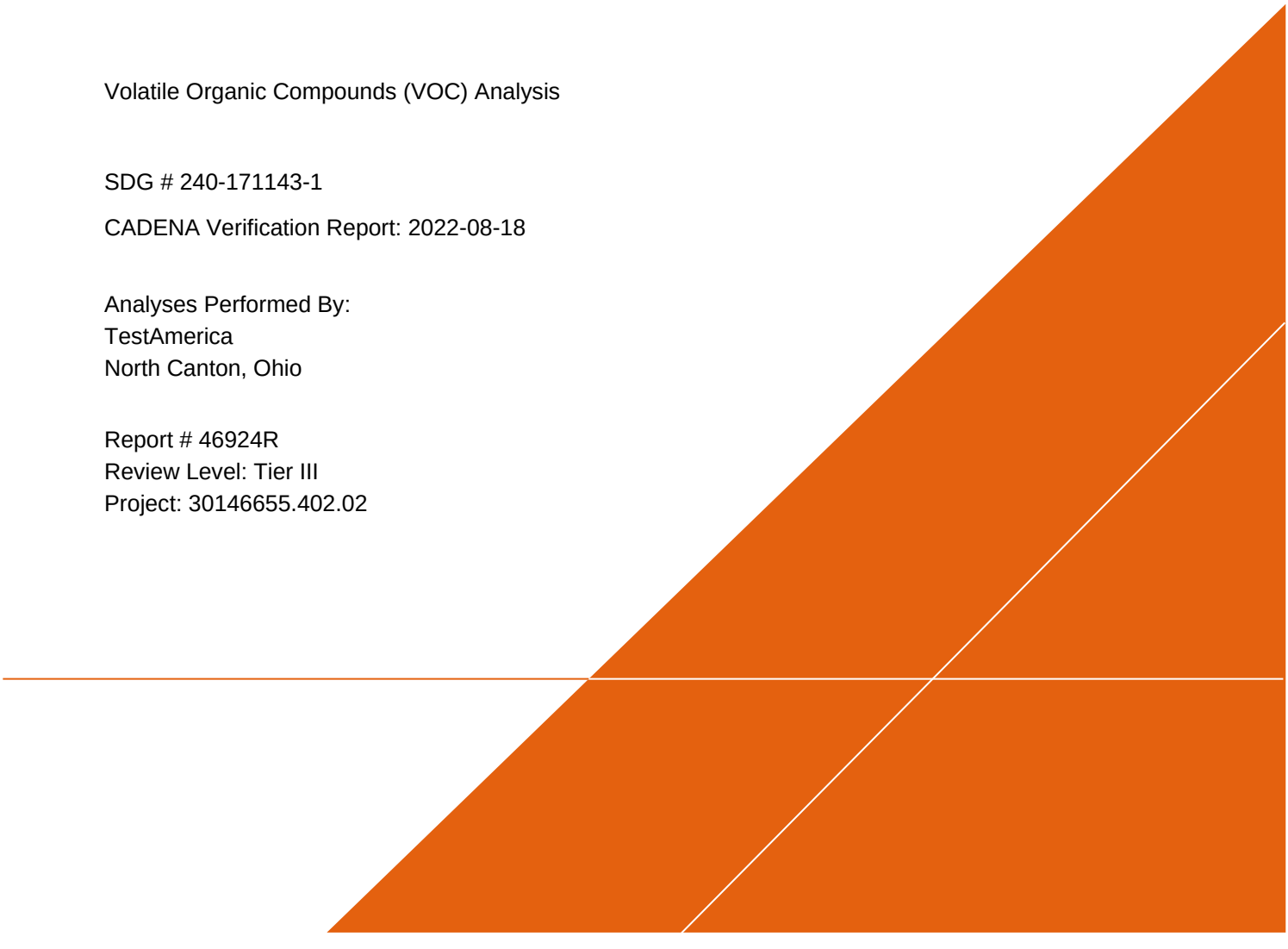
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171143-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46924R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171143-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_120	240-171143-1	Water	08/04/22		X	
MW-193S_080422	240-171143-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 20, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record 45/45

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 120	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-193s_080422	08/04/22	1010		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171143 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Boston Post 3445a side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sinkering	Arcadis	08/04/22 1620	Arcadis Cold Storage	Arcadis	08/04/22 1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000	Jeri Hale	EETA	8/5/22 1001
Relinquished by: Jeri Hale	Company: EETA	Date/Time: 8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Client Sample ID: TRIP BLANK_120

Lab Sample ID: 240-171143-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 14:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 14:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 14:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 14:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 14:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 14:15*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 14:15*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/10/22 14:15*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171143-1

Client Sample ID: MW-193S_080422

Date Collected: 08/04/22 10:10
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171143-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/10/22 15:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/10/22 18:35*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/10/22 18:35*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/10/22 18:35*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/10/22 18:35*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171147-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:21:28 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Job ID: 240-171147-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171147-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-158S_080322 (240-171147-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171147-1	TRIP BLANK_51	Water	08/03/22 00:00	08/06/22 10:00
240-171147-2	MW-158S_080322	Water	08/03/22 13:05	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Client Sample ID: TRIP BLANK_51 — Lab Sample ID: 240-171147-1

No Detections.

Client Sample ID: MW-158S_080322 — Lab Sample ID: 240-171147-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Client Sample ID: TRIP BLANK_51

Date Collected: 08/03/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171147-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 15:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 15:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 15:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 15:49*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/10/22 15:49*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/10/22 15:49*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/10/22 15:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Client Sample ID: MW-158S_080322
Date Collected: 08/03/22 13:05
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171147-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 17:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 20:10*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/10/22 20:10*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 20:10*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*08/10/22 20:10*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171147-1	TRIP BLANK_51	104	94	102	107
240-171147-2	MW-158S_080322	105	98	104	112
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171147-2	MW-158S_080322	80
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171147-2	MW-158S_080322	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171147-1	TRIP BLANK_51	Total/NA	Water	8260D	
240-171147-2	MW-158S_080322	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Client Sample ID: TRIP BLANK_51

Lab Sample ID: 240-171147-1

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 15:49

Client Sample ID: MW-158S_080322

Lab Sample ID: 240-171147-2

Date Collected: 08/03/22 13:05

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 20:10
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 17:23

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sykaris	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_51	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
NW-158s_080322	08/04/22	1305		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon St Yellow house Backyard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaris	Arcadis	08/04/22 1620	Arcadis Cold Storage	Arcadis	08/04/22/1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000	J. Hall	EETA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
J. Hall	EETA	8/5/22 1030			

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171146 (7 temp 8.6.22)
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171147

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171147-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171147-1

		Sample Name:	TRIP BLANK_51				MW-158S_080322			
		Lab Sample ID:	2401711471				2401711472			
		Sample Date:	8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

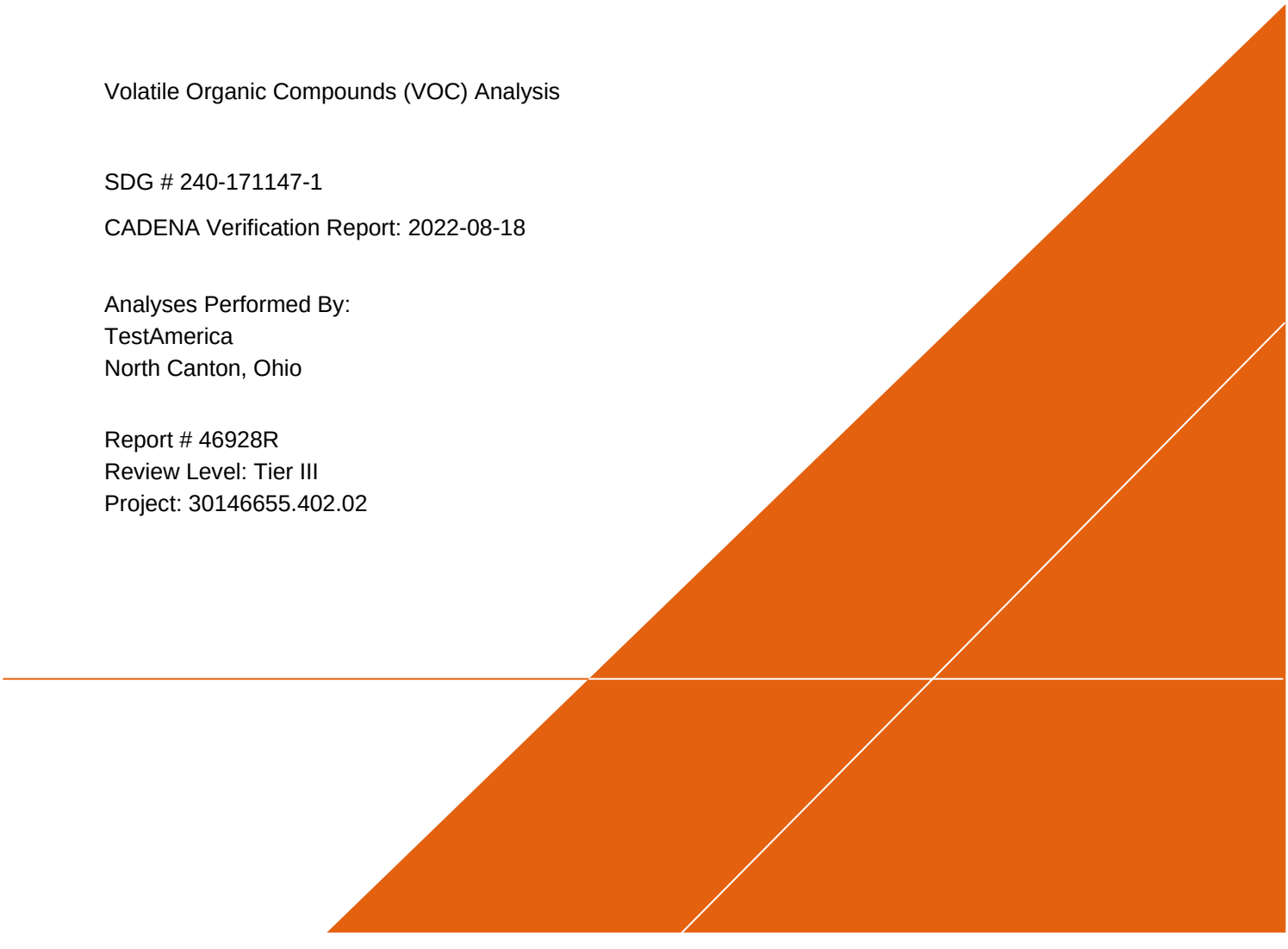
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171147-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46928R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171147-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_51	240-171147-1	Water	08/03/22		X	
MW-158S_080322	240-171147-2	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 21, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sam Sykaris	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_S1	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
NW-158s_080322	08/04/22	1305		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171147 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon St Yellow house Backyard

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaris	Arcadis	8/4/22 1620	Arcadis Cold Storage	Arcadis	08/04/22/1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000	J. Hall	EETA	8/5/22 1001
Relinquished by: J. Hall	Company: EETA	Date/Time: 8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Client Sample ID: TRIP BLANK_51

Date Collected: 08/03/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171147-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 15:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 15:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 15:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/10/22 15:49*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/10/22 15:49*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/10/22 15:49*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/10/22 15:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171147-1

Client Sample ID: MW-158S_080322
Date Collected: 08/03/22 13:05
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171147-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 17:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 20:10*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/10/22 20:10*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 20:10*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*08/10/22 20:10*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171514-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:43:42 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171514-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171514-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method 8260D: No MS/MSD in batch 538924 due to an incorrect dilution: TRIP BLANK_68 (240-171514-1) and MW-88S_081022 (240-171514-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171514-1	TRIP BLANK_68	Water	08/10/22 00:00	08/13/22 09:45
240-171514-2	MW-88S_081022	Water	08/10/22 09:55	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Client Sample ID: TRIP BLANK_68 — Lab Sample ID: 240-171514-1

No Detections.

Client Sample ID: MW-88S_081022 — Lab Sample ID: 240-171514-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Client Sample ID: TRIP BLANK_68
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171514-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/15/22 18:13*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 18:13*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 18:13*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 18:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Client Sample ID: MW-88S_081022
Date Collected: 08/10/22 09:55
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171514-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 06:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*08/16/22 06:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 18:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 18:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 18:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/15/22 18:35*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 18:35*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/15/22 18:35*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/15/22 18:35*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171514-1	TRIP BLANK_68	111	105	102	102
240-171514-2	MW-88S_081022	114	104	103	104
LCS 240-538924/5	Lab Control Sample	108	107	105	105
MB 240-538924/8	Method Blank	109	104	102	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171412-J-2 MS	Matrix Spike	89
240-171412-P-2 MSD	Matrix Spike Duplicate	86
240-171514-2	MW-88S_081022	104
LCS 240-538971/3	Lab Control Sample	85
MB 240-538971/4	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538924/8
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/15/22 15:38*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 15:38*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 15:38*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 15:38*	*1*

Lab Sample ID: LCS 240-538924/5
Matrix: Water
Analysis Batch: 538924

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.1		ug/L		106	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	19.0		ug/L		95	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	20.0		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538971/4
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/15/22 20:58*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538971/3
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.74		ug/L		97	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171412-J-2 MS
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171412-P-2 MSD
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	0	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

GC/MS VOA

Analysis Batch: 538924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171514-1	TRIP BLANK_68	Total/NA	Water	8260D	
240-171514-2	MW-88S_081022	Total/NA	Water	8260D	
MB 240-538924/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538924/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171514-2	MW-88S_081022	Total/NA	Water	8260D SIM	
MB 240-538971/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538971/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171412-J-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171412-P-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Client Sample ID: TRIP BLANK_68

Lab Sample ID: 240-171514-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 18:13

Client Sample ID: MW-88S_081022

Lab Sample ID: 240-171514-2

Date Collected: 08/10/22 09:55

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538924	TJL1	EET CAN	08/15/22 18:35
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 06:39

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_68	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-885_081022	8/10/22	955		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171514 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34965 Wadsworth St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/10/22 1450	NOVI COLD STORAGE	ARCADIS	8/10/22 1450
[signature]	Arcadis	8/12/22 955	[signature]	EETNC	8/12/22 956
[signature]	EETNC	8/12/22 958	[signature]	EETNC	8-13-22 0945

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171514
Barberton Facility

Client Arcadis Site Name Livonia

Cooler Received on 8-13-22 Opened on 8-13-22

Cooler unpacked by: Me

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	(Yes)	No
If yes, Questions 13-17 have been checked at the originating laboratory.	(Yes)	No 8-13-22
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171514-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171514-1

		Sample Name:	TRIP BLANK_68				MW-88S_081022			
		Lab Sample ID:	2401715141				2401715142			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

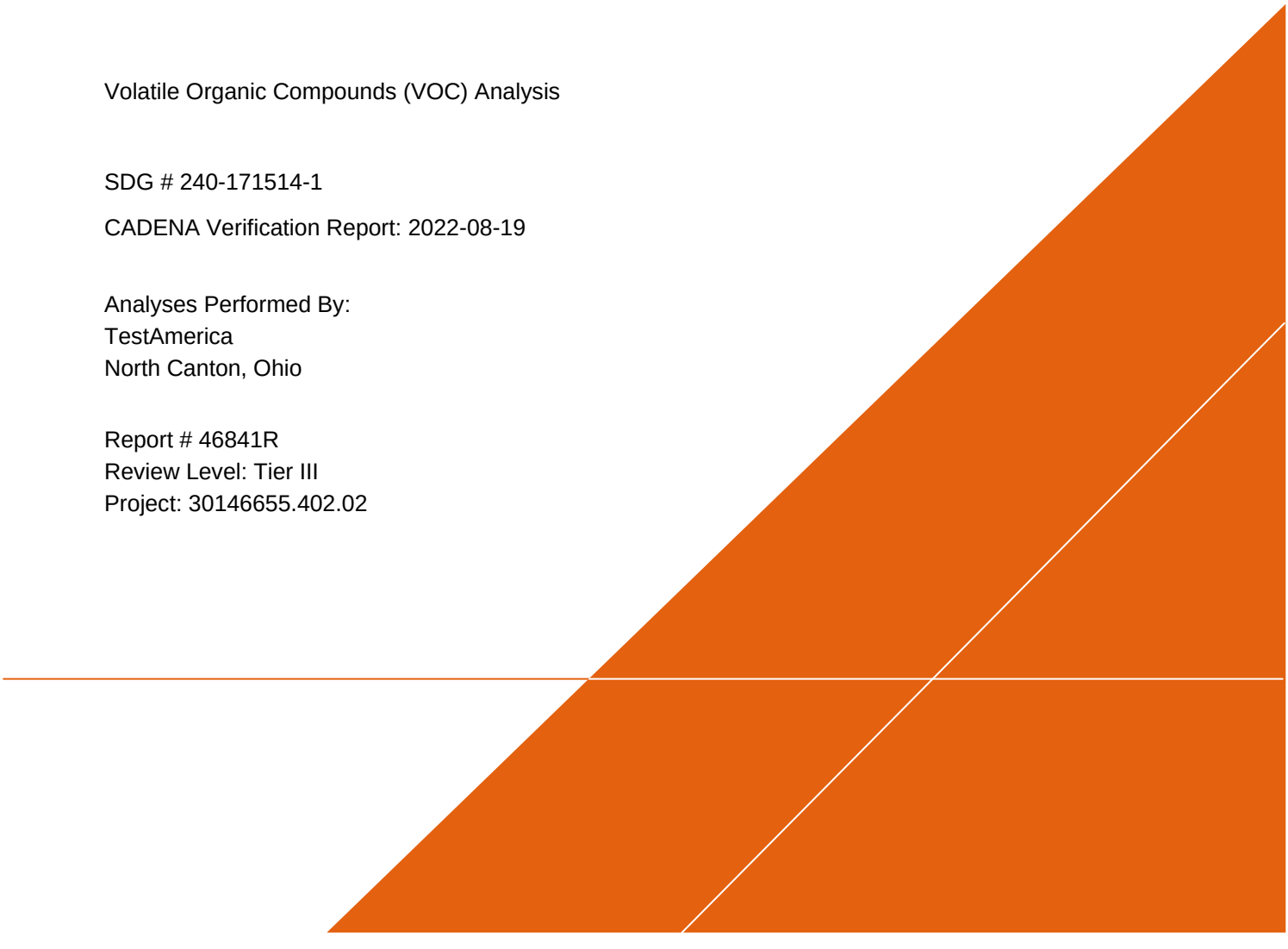
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171514-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46841R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171514-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_68	240-171514-1	Water	08/10/22		X	
MW-88S_081022	240-171514-2	Water	08/10/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 23, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_68	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-885_081022	8/10/22	955		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171514 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34965 Wadsworth St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/10/22 1450	NOVI COLD STORAGE	ARCADIS	8/10/22 1450
[signature]	Arcadis	8/12/22 955	[signature]	EETNC	8/12/22 956
[signature]	EETNC	8/12/22 958	[signature]	EETNC	8-13-22 0945

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8/19/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Client Sample ID: TRIP BLANK_68
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171514-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/15/22 18:13*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/15/22 18:13*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/15/22 18:13*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 18:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171514-1

Client Sample ID: MW-88S_081022
Date Collected: 08/10/22 09:55
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171514-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 06:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*08/16/22 06:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 18:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 18:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 18:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 18:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/15/22 18:35*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/15/22 18:35*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/15/22 18:35*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/15/22 18:35*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170891-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 10:35:04 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Job ID: 240-170891-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170891-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170891-1	TRIP BLANK_37	Water	08/01/22 00:00	08/03/22 09:45
240-170891-2	MW-126S_080122	Water	08/01/22 11:50	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Client Sample ID: TRIP BLANK_37 — Lab Sample ID: 240-170891-1

No Detections.

Client Sample ID: MW-126S_080122 — Lab Sample ID: 240-170891-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Client Sample ID: TRIP BLANK_37

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170891-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 15:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 15:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 15:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 15:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 15:14*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/05/22 15:14*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 15:14*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 15:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Client Sample ID: MW-126S_080122
Date Collected: 08/01/22 11:50
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170891-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 14:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 17:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 17:19	1
Tetrachloroethene	1.0	U F1	1.0	0.44	ug/L			08/05/22 17:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 17:19	1
Trichloroethene	1.0	U F1	1.0	0.44	ug/L			08/05/22 17:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 17:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 17:19*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/05/22 17:19*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 17:19*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/05/22 17:19*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170891-1	TRIP BLANK_37	99	89	96	101
240-170891-2	MW-126S_080122	99	86	98	103
240-170891-2 MS	MW-126S_080122	94	98	98	100
240-170891-2 MSD	MW-126S_080122	94	102	99	99
LCS 240-537713/4	Lab Control Sample	93	96	99	100
MB 240-537713/7	Method Blank	97	88	96	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170891-2	MW-126S_080122	86
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537713/7
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:09*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 13:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 13:09*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:09*	*1*

Lab Sample ID: LCS 240-537713/4
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.4		ug/L		113	63 - 134
cis-1,2-Dichloroethene	25.0	25.6		ug/L		102	77 - 123
Tetrachloroethene	25.0	27.3		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122
Vinyl chloride	12.5	9.78		ug/L		78	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170891-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: MW-126S_080122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	17.3		ug/L		69	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	18.0		ug/L		72	66 - 128
Tetrachloroethene	1.0	U F1	25.0	12.8	F1	ug/L		51	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	16.9		ug/L		68	56 - 136
Trichloroethene	1.0	U F1	25.0	14.4	F1	ug/L		57	61 - 124
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170891-2 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: MW-126S_080122
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	100		73 - 120

Lab Sample ID: 240-170891-2 MSD
Matrix: Water
Analysis Batch: 537713

Client Sample ID: MW-126S_080122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	19.0		ug/L		76	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	25.0	18.5		ug/L		74	66 - 128	3	14
Tetrachloroethene	1.0	U F1	25.0	14.8	F1	ug/L		59	62 - 131	15	20
trans-1,2-Dichloroethene	1.0	U	25.0	17.9		ug/L		71	56 - 136	6	15
Trichloroethene	1.0	U F1	25.0	15.5		ug/L		62	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	15.5		ug/L		124	43 - 157	24	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		66 - 120		08/09/22 13:17	1

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		66 - 120

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

GC/MS VOA

Analysis Batch: 537713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170891-1	TRIP BLANK_37	Total/NA	Water	8260D	
240-170891-2	MW-126S_080122	Total/NA	Water	8260D	
MB 240-537713/7	Method Blank	Total/NA	Water	8260D	
LCS 240-537713/4	Lab Control Sample	Total/NA	Water	8260D	
240-170891-2 MS	MW-126S_080122	Total/NA	Water	8260D	
240-170891-2 MSD	MW-126S_080122	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170891-2	MW-126S_080122	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Client Sample ID: TRIP BLANK_37

Lab Sample ID: 240-170891-1

Date Collected: 08/01/22 00:00

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537713	SAM	EET CAN	08/05/22 15:14

Client Sample ID: MW-126S_080122

Lab Sample ID: 240-170891-2

Date Collected: 08/01/22 11:50

Matrix: Water

Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537713	SAM	EET CAN	08/05/22 17:19
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 14:19

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170891-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190 TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_37	—	—		1						1					N	G	X	X	X	X	X	X	X (Ext)				1 Trip Blank
MW-126S_080122	08/01/22	1150		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170891 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34806 STANDISH

Submit all results through Cadena at jtomalla@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	08/01/22 1512	NOVI COLD STORAGE	ARCADIS	08/01/22 1512
	ARCADIS	8/2/22 947	Jen Hall	EETA	8/2/22 948
Jen Hall	EETA	8/2/22 950	Received in Laboratory by:	EETA	8/3/22 945

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170891
170810

Eurofins - Canton Sample Receipt Form/Narrative **Login # :**
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 8/3/22 Opened on 8/3/22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 810420L6	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

CK 8.3.22 STM 8.3.22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170891-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

MSD - GCMS VOC sample -002 MS and MSD recovery outliers were outliers with the recovery biased low for the following analyte: TETRACHLOROETHENE. Client sample results for this analyte should be considered to be estimated and qualified with a UJ flags if non-detect. MS only outlier for TRICHLOROTHENE did not result in qualification of data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170891-1

Sample Name: MW-126S_080122
Lab Sample ID: 2401708912
Sample Date: 8/1/2022

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170891-1

		Sample Name:	TRIP BLANK_37				MW-126S_080122			
		Lab Sample ID:	2401708911				2401708912			
		Sample Date:	8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

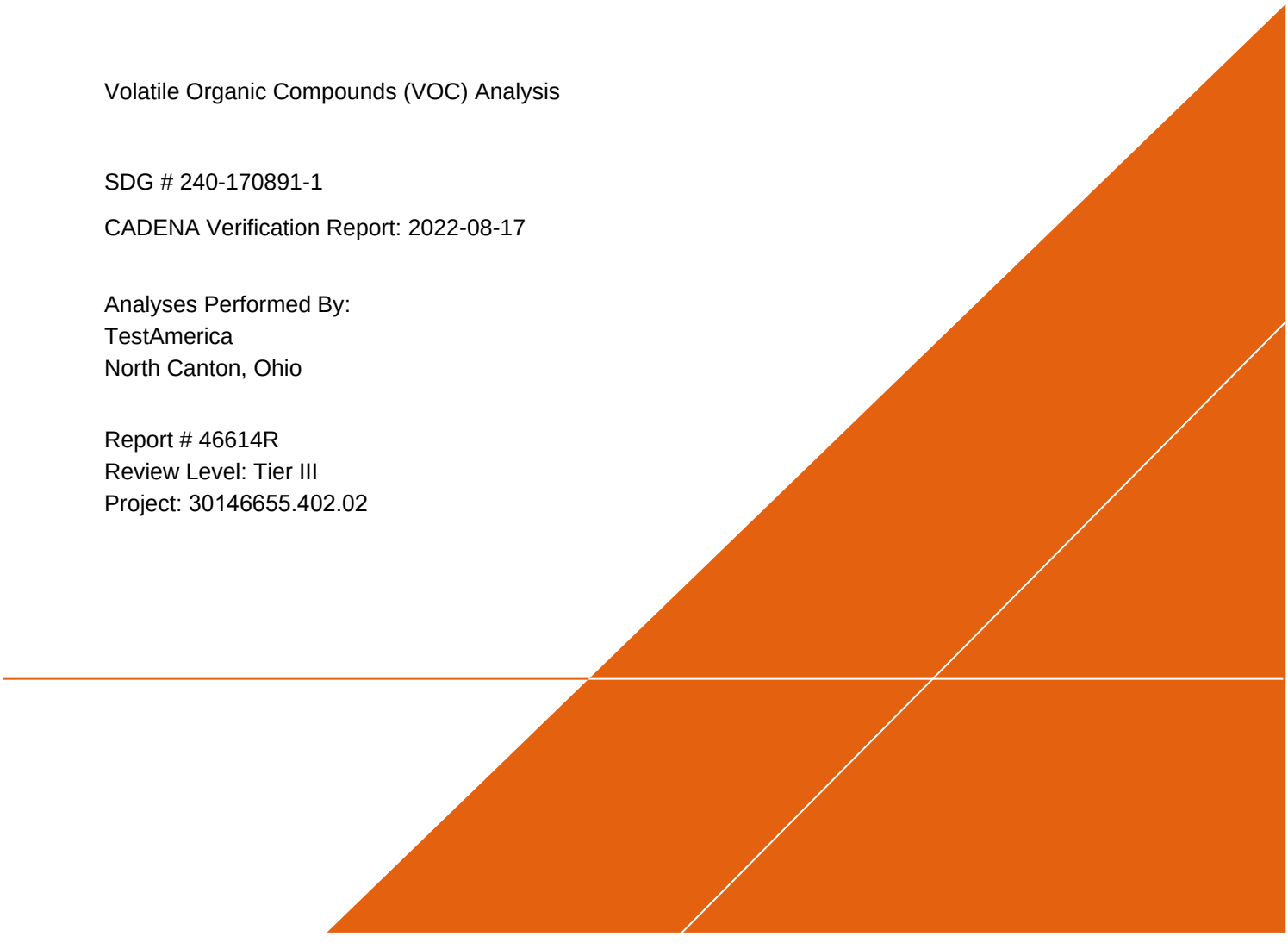
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170891-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46614R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170891-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_37	240-170891-1	Water	08/01/22		X	
MW-126S_080122	240-170891-2	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN 190 TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 2 weeks		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_37	—	—		1						1					N	G	X	X	X	X	X	X	X (Err)				1 Trip Blank
MW-126S_080122	08/01/22	1150		6						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170891 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ✓ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 3466 STANDISH

Submit all results through Cadena at jtomalla@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	08/01/22 1512	NOVI COLD STORAGE	ARCADIS	08/01/22 1512
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	ARCADIS	8/2/22 947	Jen Hall	EETA	8/2/22 948
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jen Hall	EETA	8/2/22 950	[illegible]	EETA	8/3/22 945

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08/17/2022

Client Sample ID: TRIP BLANK_37
Lab Sample ID: 240-170891-1

Date Collected: 08/01/22 00:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 15:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 15:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 15:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 15:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 15:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 15:14*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/05/22 15:14*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 15:14*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 15:14*	*1*

Client Sample ID: MW-126S_080122
Lab Sample ID: 240-170891-2

Date Collected: 08/01/22 11:50
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 14:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 17:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 17:19	1
Tetrachloroethene	1.0	~~U F1~~ UJ	1.0	0.44	ug/L			08/05/22 17:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 17:19	1
Trichloroethene	1.0	~~U F1~~	1.0	0.44	ug/L			08/05/22 17:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 17:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 17:19*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/05/22 17:19*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/05/22 17:19*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/05/22 17:19*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171137-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 2:02:41 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171137-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171137-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-109S_080422 (240-171137-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171137-1	TRIP BLANK_128	Water	08/04/22 00:00	08/06/22 10:00
240-171137-2	MW-109S_080422	Water	08/04/22 11:45	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Client Sample ID: TRIP BLANK_128 — Lab Sample ID: 240-171137-1

No Detections.

Client Sample ID: MW-109S_080422 — Lab Sample ID: 240-171137-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Client Sample ID: TRIP BLANK_128

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171137-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/10/22 16:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 16:35*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/10/22 16:35*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/10/22 16:35*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Client Sample ID: MW-109S_080422
Date Collected: 08/04/22 11:45
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171137-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/10/22 13:37*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 16:59*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 16:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/10/22 16:59*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/10/22 16:59*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171115-E-1 MS	Matrix Spike	92	88	90	88
240-171115-H-1 MSD	Matrix Spike Duplicate	98	97	98	95
240-171137-1	TRIP BLANK_128	103	90	95	96
240-171137-2	MW-109S_080422	105	88	94	100
LCS 240-538239/5	Lab Control Sample	99	98	98	96
MB 240-538239/8	Method Blank	97	84	90	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171137-2	MW-109S_080422	88
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538239/8
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 11:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 11:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 11:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 11:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 11:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 11:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/10/22 11:10*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/10/22 11:10*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/10/22 11:10*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/10/22 11:10*	*1*

Lab Sample ID: LCS 240-538239/5
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		95	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		95	77 - 123
Tetrachloroethene	20.0	17.7		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	19.3		ug/L		97	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	17.0		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171115-E-1 MS
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128
Tetrachloroethene	1.0	U	20.0	17.3		ug/L		86	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 136
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124
Vinyl chloride	1.0	U	20.0	16.4		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171115-E-1 MS
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	88		73 - 120

Lab Sample ID: 240-171115-H-1 MSD
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 136	4	15
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	16.7		ug/L		84	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	97		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	95		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		08/10/22 12:16	1

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

GC/MS VOA

Analysis Batch: 538239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171137-1	TRIP BLANK_128	Total/NA	Water	8260D	
240-171137-2	MW-109S_080422	Total/NA	Water	8260D	
MB 240-538239/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538239/5	Lab Control Sample	Total/NA	Water	8260D	
240-171115-E-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-171115-H-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171137-2	MW-109S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Client Sample ID: TRIP BLANK_128

Lab Sample ID: 240-171137-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538239	TJL1	EET CAN	08/10/22 16:35

Client Sample ID: MW-109S_080422

Lab Sample ID: 240-171137-2

Date Collected: 08/04/22 11:45

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538239	TJL1	EET CAN	08/10/22 16:59
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 13:37

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171137-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sykalia	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_128	8/4/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW09s-080422	08/04/22	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171137 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34990 Beech St side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykalia	Arcadis	08/04/22/1620	Arcadis Cold Storage	Arcadis	08/04/22/1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/5/22 1000	[illegible]	EE74	8/5/22 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EE74	8/5/22 1030			

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171137**
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler unpacked by: JMR

Cooler Received on 8-6-22 Opened on 8-6-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y)N), # of containers (Y)N), and sample type of grab/comp(Y)N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171137

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171137-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171137-1

		Sample Name:	TRIP BLANK_128				MW-109S_080422			
		Lab Sample ID:	2401711371				2401711372			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

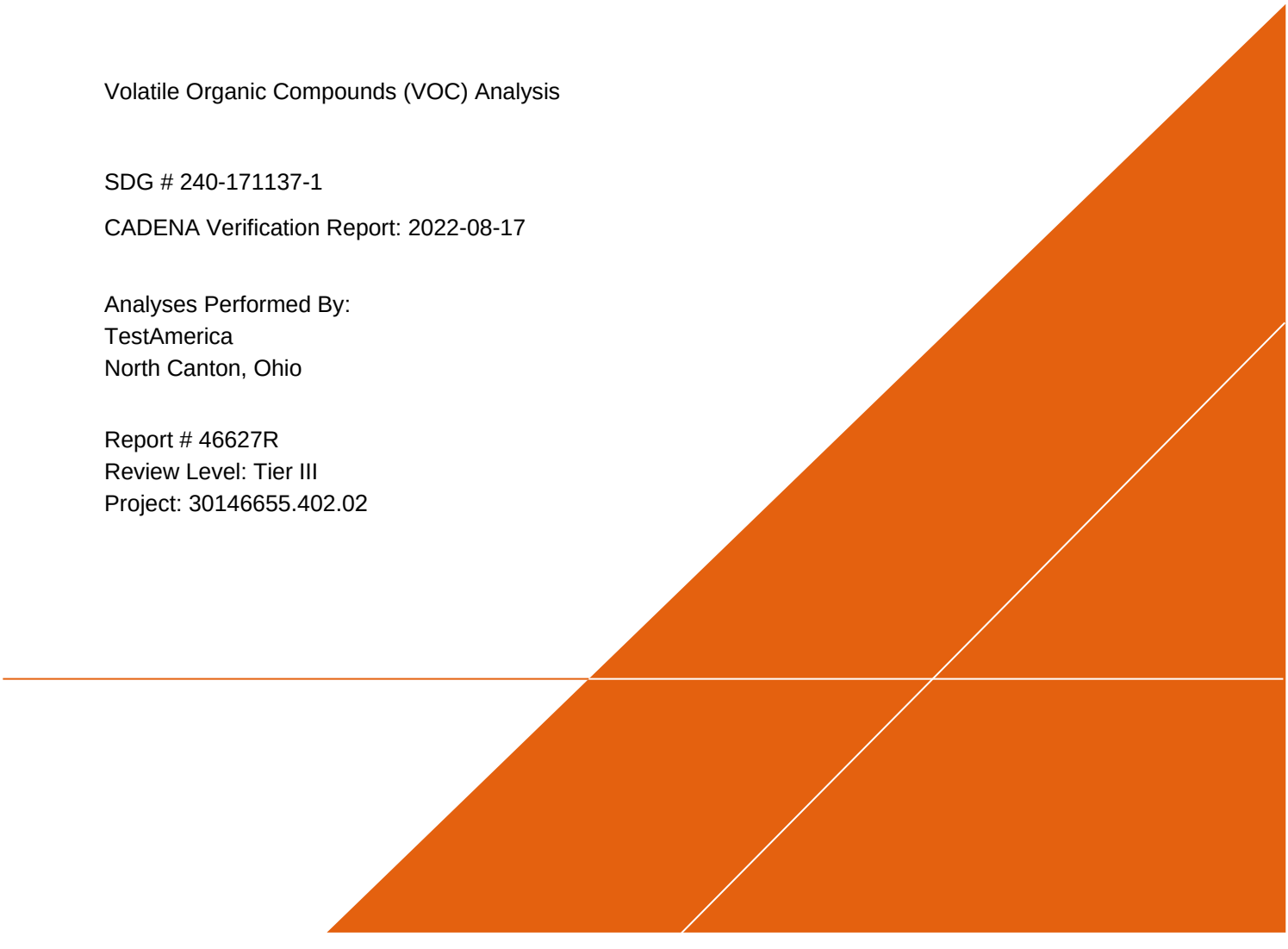
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171137-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46627R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171137-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_128	240-171137-1	Water	08/04/22		X	
MW-109S_080422	240-171137-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sykalla	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 178	8/4/22	—		2						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-09S - 080422	08/04/22	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171137 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34990 Beaver St side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykalla	Arcadis	08/04/22 1620	Arcadis Cold Storage	Arcadis	08/04/22 1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000		EE74	8/5/22 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EE74	8/5/22 1030			

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Client Sample ID: TRIP BLANK_128
Lab Sample ID: 240-171137-1
Date Collected: 08/04/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/10/22 16:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 16:35*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/10/22 16:35*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/10/22 16:35*	*1*

Client Sample ID: MW-109S_080422
Lab Sample ID: 240-171137-2
Date Collected: 08/04/22 11:45
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/10/22 13:37*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/10/22 16:59*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 16:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/10/22 16:59*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/10/22 16:59*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170978-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/18/2022 8:12:54 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Job ID: 240-170978-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170978-1

Comments
No additional comments.

Receipt
The samples were received on 8/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4° C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170978-1	TRIP BLANK_39	Water	08/02/22 00:00	08/04/22 09:40
240-170978-2	MW-181S_080222	Water	08/02/22 09:50	08/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Client Sample ID: TRIP BLANK_39 — Lab Sample ID: 240-170978-1

No Detections.

Client Sample ID: MW-181S_080222 — Lab Sample ID: 240-170978-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Client Sample ID: TRIP BLANK_39
Date Collected: 08/02/22 00:00
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170978-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/08/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 15:27*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 15:27*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 15:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Client Sample ID: MW-181S_080222
Date Collected: 08/02/22 09:50
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170978-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 15:55*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 19:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 19:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 19:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/08/22 19:25*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/08/22 19:25*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/08/22 19:25*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 19:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170809-B-16 MS	Matrix Spike	87	91	96	96
240-170809-B-16 MSD	Matrix Spike Duplicate	86	90	93	93
240-170978-1	TRIP BLANK_39	97	91	98	103
240-170978-2	MW-181S_080222	98	90	95	103
LCS 240-537897/5	Lab Control Sample	93	94	100	101
MB 240-537897/10	Method Blank	95	91	96	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170978-2	MW-181S_080222	85
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537897/10
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 13:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/08/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 13:52*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/08/22 13:52*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/08/22 13:52*	*1*

Lab Sample ID: LCS 240-537897/5
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.7		ug/L		99	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	28.8		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	24.4		ug/L		97	75 - 124
Trichloroethene	25.0	26.8		ug/L		107	70 - 122
Vinyl chloride	25.0	23.1		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	130	U	3130	2900		ug/L		93	56 - 135
cis-1,2-Dichloroethene	4300		3130	7080		ug/L		89	66 - 128
Tetrachloroethene	1700		3130	4890		ug/L		101	62 - 131
trans-1,2-Dichloroethene	130	U	3130	2850		ug/L		91	56 - 136
Trichloroethene	410		3130	3530		ug/L		100	61 - 124
Vinyl chloride	1400		3130	3900		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170809-B-16 MS
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-170809-B-16 MSD
Matrix: Water
Analysis Batch: 537897

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 135	3	26
cis-1,2-Dichloroethene	4300		3130	6860		ug/L		82	66 - 128	3	14
Tetrachloroethene	1700		3130	4670		ug/L		94	62 - 131	5	20
trans-1,2-Dichloroethene	130	U	3130	2820		ug/L		90	56 - 136	1	15
Trichloroethene	410		3130	3390		ug/L		95	61 - 124	4	15
Vinyl chloride	1400		3130	3880		ug/L		81	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

GC/MS VOA

Analysis Batch: 537897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170978-1	TRIP BLANK_39	Total/NA	Water	8260D	
240-170978-2	MW-181S_080222	Total/NA	Water	8260D	
MB 240-537897/10	Method Blank	Total/NA	Water	8260D	
LCS 240-537897/5	Lab Control Sample	Total/NA	Water	8260D	
240-170809-B-16 MS	Matrix Spike	Total/NA	Water	8260D	
240-170809-B-16 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170978-2	MW-181S_080222	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Client Sample ID: TRIP BLANK_39

Lab Sample ID: 240-170978-1

Date Collected: 08/02/22 00:00

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 15:27

Client Sample ID: MW-181S_080222

Lab Sample ID: 240-170978-2

Date Collected: 08/02/22 09:50

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537897	SAM	EET CAN	08/08/22 19:25
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 15:55

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170978-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_39	—	—		1						1					N	G	X	X	X	X	X	X	X	1 Trip Blank
MW-181S-080222	08/02/22	950		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170978 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34990 WADSWORTH

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	08/02/22 1430	NOVI COLD STORAGE	ARCADIS	08/02/22 1430
[signature]	ARCADIS	8/3/22 1145	[signature]	EET4	8/3/22 1146
Jeri Hall	EET4	8/3/22 1150	[signature]	BETNC	8-4-22 940

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8/18/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 170978
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Nancy Boyer

Cooler Received on 8-4-22 Opened on 8-4-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170978-1
Sample date: 2022-08-02
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170978-1

		Sample Name:	TRIP BLANK_39				MW-181S_080222			
		Lab Sample ID:	2401709781				2401709782			
		Sample Date:	8/2/2022				8/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

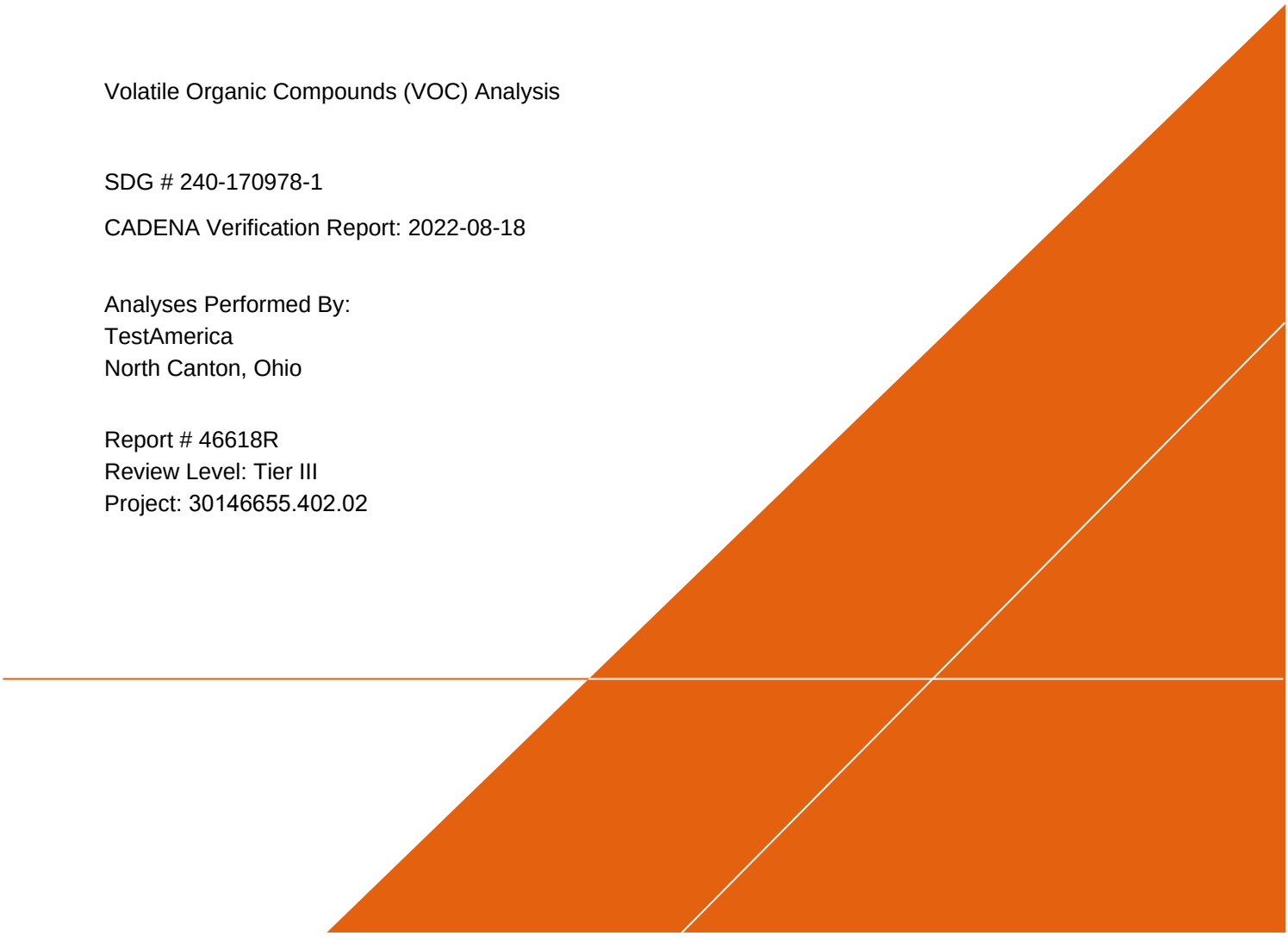
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170978-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46618R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170978-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_39	240-170978-1	Water	08/02/22		X	
MW-181S_080222	240-170978-2	Water	08/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_39	—	—		1						1					N	G	X	X	X	X	X	X	X	1 Trip Blank
MW-181S-080222	08/02/22	950		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170978 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34990 WADSWORTH

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	08/02/22 1430	NOVI COLD STORAGE	ARCADIS	08/02/22 1430
[signature]	ARCADIS	8/3/22 1145	[signature]	EET4	8/3/22 1146
Jeri Hall	EET4	8/3/22 1150	[signature]	BETPC	8-4-22 940

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08/18/2022

Client Sample ID: TRIP BLANK_39
Lab Sample ID: 240-170978-1
Date Collected: 08/02/22 00:00
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/08/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/08/22 15:27*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/08/22 15:27*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 15:27*	*1*

Client Sample ID: MW-181S_080222
Lab Sample ID: 240-170978-2
Date Collected: 08/02/22 09:50
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 15:55*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/08/22 19:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/08/22 19:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/08/22 19:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/08/22 19:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/08/22 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/08/22 19:25*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/08/22 19:25*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/08/22 19:25*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/08/22 19:25*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171140-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 2:07:08 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171140-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171140-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-170S_080322 (240-171140-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171140-1	TRIP BLANK_50	Water	08/03/22 00:00	08/06/22 10:00
240-171140-2	MW-170S_080322	Water	08/03/22 11:45	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Client Sample ID: TRIP BLANK_50 — Lab Sample ID: 240-171140-1

No Detections.

Client Sample ID: MW-170S_080322 — Lab Sample ID: 240-171140-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Client Sample ID: TRIP BLANK_50

Date Collected: 08/03/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171140-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 18:08*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 18:08*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/10/22 18:08*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/10/22 18:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Client Sample ID: MW-170S_080322
Date Collected: 08/03/22 11:45
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171140-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 14:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/10/22 14:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/10/22 18:31*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 18:31*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/10/22 18:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/10/22 18:31*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171115-E-1 MS	Matrix Spike	92	88	90	88
240-171115-H-1 MSD	Matrix Spike Duplicate	98	97	98	95
240-171140-1	TRIP BLANK_50	101	89	87	96
240-171140-2	MW-170S_080322	106	88	95	98
LCS 240-538239/5	Lab Control Sample	99	98	98	96
MB 240-538239/8	Method Blank	97	84	90	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171140-2	MW-170S_080322	84
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538239/8
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 11:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 11:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 11:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 11:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 11:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 11:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/10/22 11:10*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/10/22 11:10*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/10/22 11:10*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/10/22 11:10*	*1*

Lab Sample ID: LCS 240-538239/5
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		95	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		95	77 - 123
Tetrachloroethene	20.0	17.7		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	19.3		ug/L		97	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	17.0		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171115-E-1 MS
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	66 - 128
Tetrachloroethene	1.0	U	20.0	17.3		ug/L		86	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 136
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124
Vinyl chloride	1.0	U	20.0	16.4		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171115-E-1 MS
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171115-H-1 MSD
Matrix: Water
Analysis Batch: 538239

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 136	4	15
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	16.7		ug/L		84	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.9		ug/L		109	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

GC/MS VOA

Analysis Batch: 538239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171140-1	TRIP BLANK_50	Total/NA	Water	8260D	
240-171140-2	MW-170S_080322	Total/NA	Water	8260D	
MB 240-538239/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538239/5	Lab Control Sample	Total/NA	Water	8260D	
240-171115-E-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-171115-H-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171140-2	MW-170S_080322	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Client Sample ID: TRIP BLANK_50

Lab Sample ID: 240-171140-1

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538239	TJL1	EET CAN	08/10/22 18:08

Client Sample ID: MW-170S_080322

Lab Sample ID: 240-171140-2

Date Collected: 08/03/22 11:45

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538239	TJL1	EET CAN	08/10/22 18:31
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 14:24

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171140-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ Sd	8/3/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-170s_080322	8/3/22	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon st red/white/blue house backyard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	8/4/22 1620	Arcadis Cold Storage	Arcadis	8/4/22 1620
[illegible]	Arcadis	8/5/22 1000	[illegible]	EETA	8/5/22 1001
J. Hall	EETA	8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 171140
Barberton Facility

Client Arcadis Site Name Ford LTP
Cooler Received on 8-6-22 Opened on 8-6-22
Cooler unpacked by: JMR
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
-Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
-Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page
Samples processed by:

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____
VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171140

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171140-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171140-1

		Sample Name:	TRIP BLANK_50				MW-170S_080322			
		Lab Sample ID:	2401711401				2401711402			
		Sample Date:	8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

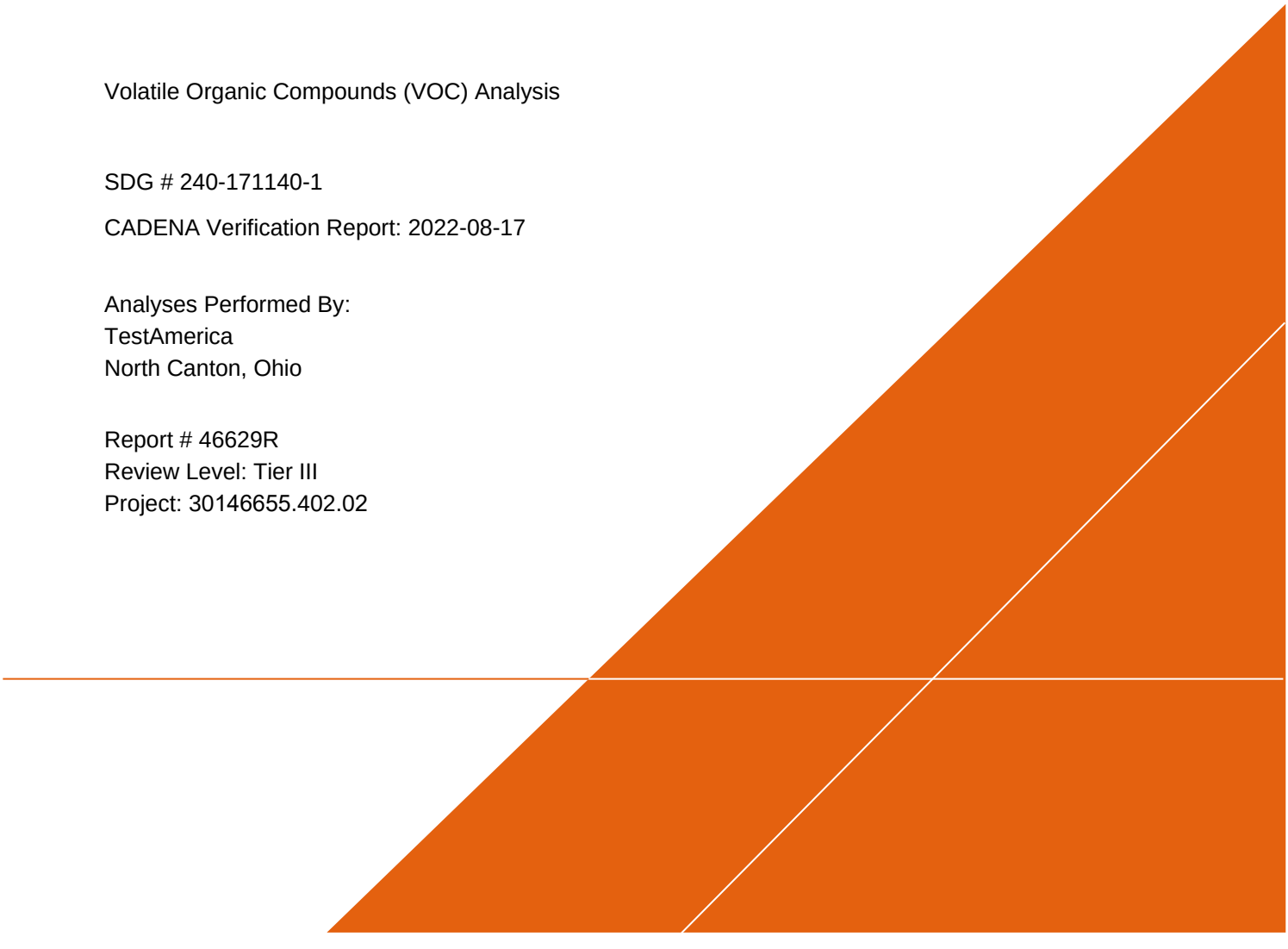
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171140-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46629R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171140-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_50	240-171140-1	Water	08/03/22		X	
MW-170S_080322	240-171140-2	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sam Eskaric	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ Sd	8/3/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-170s-080322	8/3/22	1145		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171140 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Beacon st red/white/blue house backyard
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sskaric	Arcadis	8/4/22/1620	Arcadis Cold Storage	Arcadis	8/4/22/1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000	J. Hall	EETA	8/5/22 1001
Relinquished by: J. Hall	Company: EETA	Date/Time: 8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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Client Sample ID: TRIP BLANK_50
Lab Sample ID: 240-171140-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 18:08*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 18:08*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/10/22 18:08*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/10/22 18:08*	*1*

Client Sample ID: MW-170S_080322
Lab Sample ID: 240-171140-2
Date Collected: 08/03/22 11:45
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 14:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/10/22 14:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/10/22 18:31*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 18:31*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/10/22 18:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/10/22 18:31*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171939-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/6/2022 7:59:33 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171939-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171939-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
Method 8260D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-540141.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171939-1	TRIP BLANK_106	Water	08/17/22 00:00	08/23/22 09:30
240-171939-2	MW-223S_081722	Water	08/17/22 14:01	08/23/22 09:30
240-171939-3	MW-215S_081722	Water	08/17/22 15:26	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: TRIP BLANK_106 — Lab Sample ID: 240-171939-1

No Detections.

Client Sample ID: MW-223S_081722 — Lab Sample ID: 240-171939-2

No Detections.

Client Sample ID: MW-215S_081722 — Lab Sample ID: 240-171939-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: TRIP BLANK_106
Date Collected: 08/17/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171939-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 20:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 20:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 20:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/25/22 20:24*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/25/22 20:24*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/25/22 20:24*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/25/22 20:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: MW-223S_081722
Date Collected: 08/17/22 14:01
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171939-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/26/22 22:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 20:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 20:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 20:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 20:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/25/22 20:46*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/25/22 20:46*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/25/22 20:46*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*08/25/22 20:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: MW-215S_081722
Date Collected: 08/17/22 15:26
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171939-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/26/22 22:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 21:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 21:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 21:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/25/22 21:08*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/25/22 21:08*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/25/22 21:08*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/25/22 21:08*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171939-1	TRIP BLANK_106	105	96	97	96
240-171939-2	MW-223S_081722	104	90	94	92
240-171939-3	MW-215S_081722	106	92	94	96
LCS 240-540141/5	Lab Control Sample	94	90	91	90
MB 240-540141/8	Method Blank	102	91	95	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171939-2	MW-223S_081722	74
240-171939-3	MW-215S_081722	72
240-171965-G-5 MS	Matrix Spike	83
240-171965-M-5 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
MB 240-540396/4	Method Blank	71

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540141/8
Matrix: Water
Analysis Batch: 540141

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 13:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 13:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 13:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 13:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 13:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 13:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/25/22 13:45*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/25/22 13:45*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/25/22 13:45*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/25/22 13:45*	*1*

Lab Sample ID: LCS 240-540141/5
Matrix: Water
Analysis Batch: 540141

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.6		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	20.5		ug/L		103	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	21.3		ug/L		106	75 - 124
Trichloroethene	20.0	19.5		ug/L		98	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.61		ug/L		96	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-G-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-M-5 MSD
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

GC/MS VOA

Analysis Batch: 540141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171939-1	TRIP BLANK_106	Total/NA	Water	8260D	
240-171939-2	MW-223S_081722	Total/NA	Water	8260D	
240-171939-3	MW-215S_081722	Total/NA	Water	8260D	
MB 240-540141/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540141/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171939-2	MW-223S_081722	Total/NA	Water	8260D SIM	
240-171939-3	MW-215S_081722	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171965-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: TRIP BLANK_106

Lab Sample ID: 240-171939-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540141	TJL1	EET CAN	08/25/22 20:24

Client Sample ID: MW-223S_081722

Lab Sample ID: 240-171939-2
Date Collected: 08/17/22 14:01
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540141	TJL1	EET CAN	08/25/22 20:46
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/26/22 22:29

Client Sample ID: MW-215S_081722

Lab Sample ID: 240-171939-3
Date Collected: 08/17/22 15:26
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540141	TJL1	EET CAN	08/25/22 21:08
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/26/22 22:53

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_106	8/17/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2235_081722	08/17/22	1401		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-2155_081722	08/17/22	1526		X						6					N	G	X	X	X	X	X	X	X	

240-171939 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Commercial Property 35000 PLYMOUTH

Submit all results through Cadena at jtomalia@caderaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/19/22 1636	Novi cold Storage	Arcadis	8/19/22 1636
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Rachel Hamlab	BETAK	8-23-22 9:30

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9/6/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Rachelle Hardel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(1) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

September 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171939-1
Sample date: 2022-08-17
Report received by CADENA: 2022-09-06
Initial Data Verification completed by CADENA: 2022-09-06
Number of Samples:3
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171939-1

		Sample Name:	TRIP BLANK_106				MW-223S_081722				MW-215S_081722			
		Lab Sample ID:	2401719391				2401719392				2401719393			
		Sample Date:	8/17/2022				8/17/2022				8/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

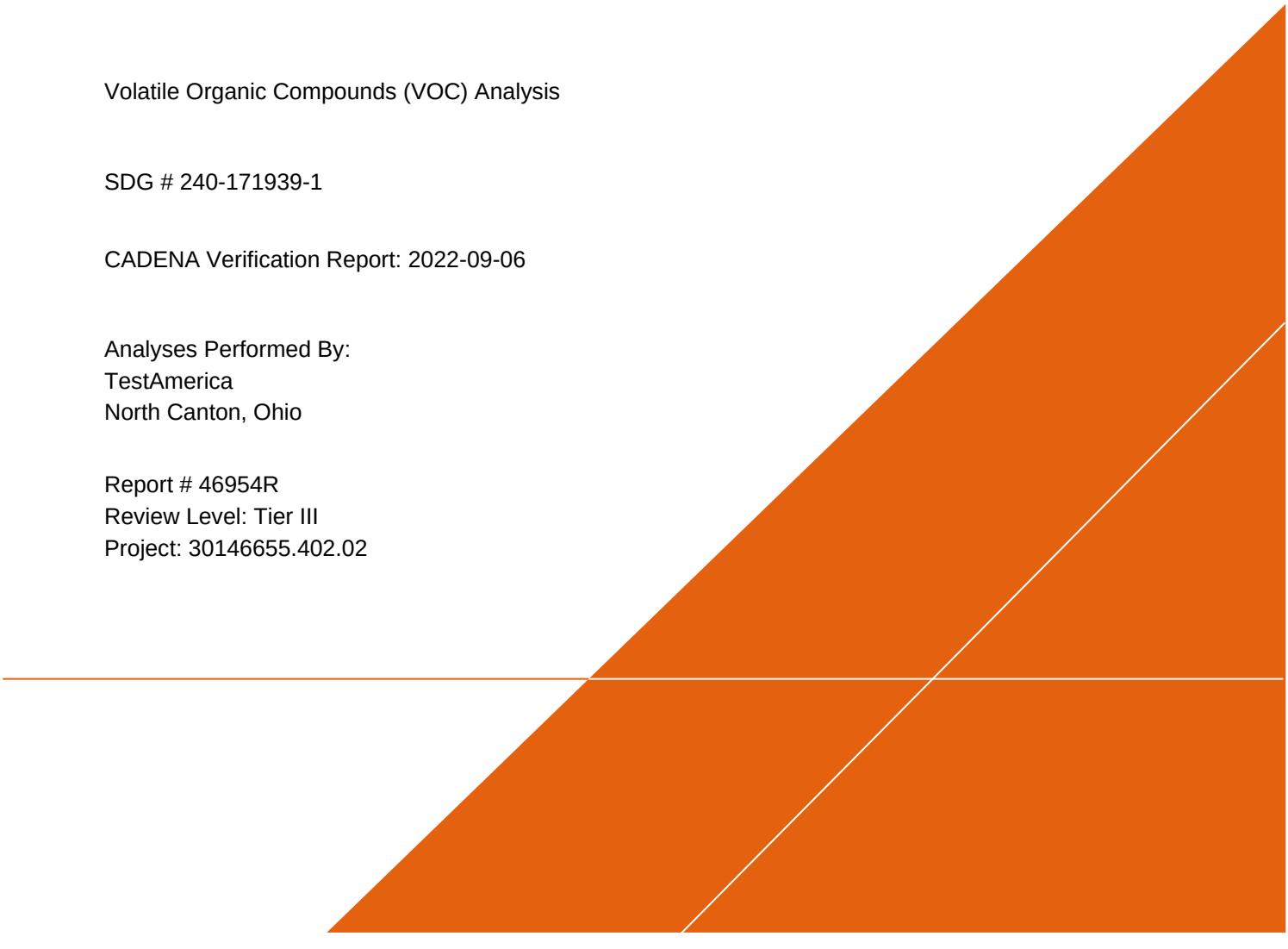
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171939-1

CADENA Verification Report: 2022-09-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46954R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171939-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_106	240-171939-1	Water	08/17/22		X	
MW-223S_081722	240-171939-2	Water	08/17/22		X	X
MW-215S_081722	240-171939-3	Water	08/17/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_106	8/17/22	—		X						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-2235_081722	08/17/22	1401		X						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-2155_081722	08/17/22	1526		X						6					N	G	X	X	X	X	X	X	X					

240-171939 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Commercial Property 35000 PLYMOUTH

Submit all results through Cadena at jtomalia@caderaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/19/22 1636	Novi cold Storage	Arcadis	8/19/22 1634
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Received in Laboratory by: Rachel Hamlab	BETNK	8-23-22 9:30

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: TRIP BLANK_106
Date Collected: 08/17/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171939-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 20:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 20:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 20:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/25/22 20:24*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/25/22 20:24*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/25/22 20:24*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/25/22 20:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: MW-223S_081722
Date Collected: 08/17/22 14:01
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171939-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/26/22 22:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 20:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 20:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 20:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 20:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 20:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/25/22 20:46*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/25/22 20:46*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/25/22 20:46*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*08/25/22 20:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171939-1

Client Sample ID: MW-215S_081722
Date Collected: 08/17/22 15:26
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171939-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/26/22 22:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 21:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 21:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 21:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 21:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*08/25/22 21:08*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/25/22 21:08*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/25/22 21:08*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/25/22 21:08*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171965-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/7/2022 11:31:31 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Job ID: 240-171965-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171965-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
Method 8260D SIM: The following volatiles samples was diluted due to foaming at the time of purging during the original sample analysis: MW-72_081922 (240-171965-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171965-1	TRIP BLANK_18	Water	08/19/22 00:00	08/23/22 09:30
240-171965-2	MW-72_081922	Water	08/19/22 10:06	08/23/22 09:30
240-171965-3	MW-226_081922	Water	08/19/22 11:21	08/23/22 09:30
240-171965-4	MW-226D_081922	Water	08/19/22 12:21	08/23/22 09:30
240-171965-5	MW-227D_081922	Water	08/19/22 13:36	08/23/22 09:30
240-171965-6	DUP-13	Water	08/19/22 00:00	08/23/22 09:30
240-171965-7	DUP-14	Water	08/19/22 00:00	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: TRIP BLANK_18 — Lab Sample ID: 240-171965-1

No Detections.

Client Sample ID: MW-72_081922 — Lab Sample ID: 240-171965-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.7		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-226_081922 — Lab Sample ID: 240-171965-3

No Detections.

Client Sample ID: MW-226D_081922 — Lab Sample ID: 240-171965-4

No Detections.

Client Sample ID: MW-227D_081922 — Lab Sample ID: 240-171965-5

No Detections.

Client Sample ID: DUP-13 — Lab Sample ID: 240-171965-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-14 — Lab Sample ID: 240-171965-7

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: TRIP BLANK_18
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 16:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/26/22 16:38*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 16:38*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/26/22 16:38*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/26/22 16:38*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-72_081922
Date Collected: 08/19/22 10:06
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 03:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/30/22 03:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:02	1
Vinyl chloride	**1.7**		1.0	0.45	ug/L			08/26/22 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/26/22 17:02*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 17:02*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 17:02*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/26/22 17:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-226_081922
Date Collected: 08/19/22 11:21
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 03:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/30/22 03:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 17:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 17:27*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/26/22 17:27*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 17:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-226D_081922

Date Collected: 08/19/22 12:21
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 03:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/30/22 03:58*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/26/22 17:51*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/26/22 17:51*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/26/22 17:51*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/26/22 17:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-227D_081922
Date Collected: 08/19/22 13:36
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 07:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/27/22 07:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 18:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 18:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 18:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 18:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 18:15*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/26/22 18:15*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/26/22 18:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 18:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: DUP-13
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 04:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/30/22 04:22*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:39	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			08/26/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 18:39*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 18:39*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/26/22 18:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: DUP-14
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*08/30/22 04:46*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 19:03*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/26/22 19:03*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/26/22 19:03*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/26/22 19:03*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171965-1	TRIP BLANK_18	95	101	100	103
240-171965-2	MW-72_081922	92	95	97	101
240-171965-3	MW-226_081922	93	95	96	99
240-171965-4	MW-226D_081922	95	96	98	104
240-171965-5	MW-227D_081922	93	96	96	99
240-171965-5 MS	MW-227D-MS_081922	91	107	102	102
240-171965-5 MSD	MW-227D-MSD_081922	88	105	101	98
240-171965-6	DUP-13	93	95	97	100
240-171965-7	DUP-14	93	96	96	102
LCS 240-540299/5	Lab Control Sample	88	104	99	98
MB 240-540299/8	Method Blank	90	97	97	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171965-2	MW-72_081922	72
240-171965-3	MW-226_081922	72
240-171965-4	MW-226D_081922	83
240-171965-5	MW-227D_081922	70
240-171965-5 MS	MW-227D-MS_081922	83
240-171965-5 MSD	MW-227D-MSD_081922	77
240-171965-6	DUP-13	77
240-171965-7	DUP-14	79
240-171967-G-4 MS	Matrix Spike	76
240-171967-M-4 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
LCS 240-540607/4	Lab Control Sample	77
MB 240-540396/4	Method Blank	71
MB 240-540607/5	Method Blank	69

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540299/8
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/26/22 11:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/26/22 11:48*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 11:48*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 11:48*	*1*

Lab Sample ID: LCS 240-540299/5
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.6		ug/L		93	63 - 134
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	77 - 123
Tetrachloroethene	20.0	20.3		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	19.1		ug/L		95	75 - 124
Trichloroethene	20.0	19.2		ug/L		96	70 - 122
Vinyl chloride	20.0	20.9		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-171965-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: MW-227D-MS_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	56 - 136
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	19.5		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171965-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: MW-227D-MS_081922
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171965-5 MSD
Matrix: Water
Analysis Batch: 540299

Client Sample ID: MW-227D-MSD_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	19.9		ug/L		100	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 136	3	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	4	15
Vinyl chloride	1.0	U	20.0	20.7		ug/L		103	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.61		ug/L		96	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: MW-227D-MS_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-5 MSD — **Client Sample ID: MW-227D-MSD_081922**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540396

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: MB 240-540607/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540607

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/29/22 23:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/29/22 23:13*	*1*

Lab Sample ID: LCS 240-540607/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540607

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.94		ug/L		99	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: 240-171967-G-4 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540607

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	6.2		10.0	16.5		ug/L		102	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-171967-M-4 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540607

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	6.2		10.0	16.3		ug/L		101	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171967-M-4 MSD
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

GC/MS VOA

Analysis Batch: 540299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171965-1	TRIP BLANK_18	Total/NA	Water	8260D	
240-171965-2	MW-72_081922	Total/NA	Water	8260D	
240-171965-3	MW-226_081922	Total/NA	Water	8260D	
240-171965-4	MW-226D_081922	Total/NA	Water	8260D	
240-171965-5	MW-227D_081922	Total/NA	Water	8260D	
240-171965-6	DUP-13	Total/NA	Water	8260D	
240-171965-7	DUP-14	Total/NA	Water	8260D	
MB 240-540299/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540299/5	Lab Control Sample	Total/NA	Water	8260D	
240-171965-5 MS	MW-227D-MS_081922	Total/NA	Water	8260D	
240-171965-5 MSD	MW-227D-MSD_081922	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171965-5	MW-227D_081922	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-5 MS	MW-227D-MS_081922	Total/NA	Water	8260D SIM	
240-171965-5 MSD	MW-227D-MSD_081922	Total/NA	Water	8260D SIM	

Analysis Batch: 540607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171965-2	MW-72_081922	Total/NA	Water	8260D SIM	
240-171965-3	MW-226_081922	Total/NA	Water	8260D SIM	
240-171965-4	MW-226D_081922	Total/NA	Water	8260D SIM	
240-171965-6	DUP-13	Total/NA	Water	8260D SIM	
240-171965-7	DUP-14	Total/NA	Water	8260D SIM	
MB 240-540607/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540607/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171967-G-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171967-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: TRIP BLANK_18
Lab Sample ID: 240-171965-1
Date Collected: 08/19/22 00:00
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 16:38

Client Sample ID: MW-72_081922
Lab Sample ID: 240-171965-2
Date Collected: 08/19/22 10:06
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 17:02
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 03:11

Client Sample ID: MW-226_081922
Lab Sample ID: 240-171965-3
Date Collected: 08/19/22 11:21
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 17:27
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 03:34

Client Sample ID: MW-226D_081922
Lab Sample ID: 240-171965-4
Date Collected: 08/19/22 12:21
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 17:51
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 03:58

Client Sample ID: MW-227D_081922
Lab Sample ID: 240-171965-5
Date Collected: 08/19/22 13:36
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 18:15
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 07:07

Client Sample ID: DUP-13
Lab Sample ID: 240-171965-6
Date Collected: 08/19/22 00:00
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 18:39
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 04:22

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: DUP-14

Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 19:03
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 04:46

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

UGAN '90 39/39

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2129	Telephone: 330-966-9781	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT (if different from below): 10 day — 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No.:
Project Number: 30080642.402.04				
PO #: 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: HCl	Filtered Sample (Y / N)	Composite-C / Grab-G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_18	8/19/22	—		X				1	N	G	X	X	X	X	X	X		1 Trip Blank
MW-72_081922	08/19/22	10:06		X				6	N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-226_081922	08/19/22	11:21		X				6	N	G	X	X	X	X	X	X	X	
MW-226D_081922	08/19/22	12:21		X				6	N	G	X	X	X	X	X	X	X	
MW-227D_081922	08/19/22	1336		X				6	N	G	X	X	X	X	X	X	X	
MW-227D-MS_081922	08/19/22	1336		X				6	N	G	X	X	X	X	X	X	X	
MW-227D-MSD_081922	08/19/22	1336		X				6	N	G	X	X	X	X	X	X	X	
DUP-13	08/19/22	—		X				6	N	G	X	X	X	X	X	X	X	
DUP-14	08/19/22	—		X				6	N	G	X	X	X	X	X	X	X	

Revised COC on 8/26/22
Correction Preservatives on DUP-13 and DUP-14 and HCL -C.Weaver

240-71965 Chain of Custody

Possible Hazard Identification: Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client, Disposal By Lab, Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Commercial Row & Residential Row : BELDEN, ORANGE LAWN, ELMIRA
Send all results through Cadena at (formatted@cadenaco.com, Cadena #E35811)
Level of Reporting requested:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/19/22 1634	Novi COLD Storage	Arcadis	8/19/22 1634
[signature]	ARCADIS	8/22/22 1120	[signature]	Eurofins	8/22/22 1120
[signature]	Eurofins	8/22/22	[signature]	TESTING	8-22-22 930

Eurofins - Canton Sample Receipt Form/Narrative Login # : _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hardel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No	Tests that are not checked for pH by Receiving: VOAs Oil and Grease TOC
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)	
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	(Yes) No	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC[illegible]	286777
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present? _____	(Yes) No	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by: _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(1) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 07, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171965-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-07
Initial Data Verification completed by CADENA: 2022-09-07
Number of Samples:7
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171965-1

		Sample Name:	TRIP BLANK_18				MW-72_081922				MW-226_081922				MW-226D_081922				MW-227D_081922				DUP-13				DUP-14			
		Lab Sample ID:	2401719651				2401719652				2401719653				2401719654				2401719655				2401719656				2401719657			
		Sample Date:	8/19/2022				8/19/2022				8/19/2022				8/19/2022				8/19/2022				8/19/2022				8/19/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																														
	OSW-8260D																													
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.7	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																													
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

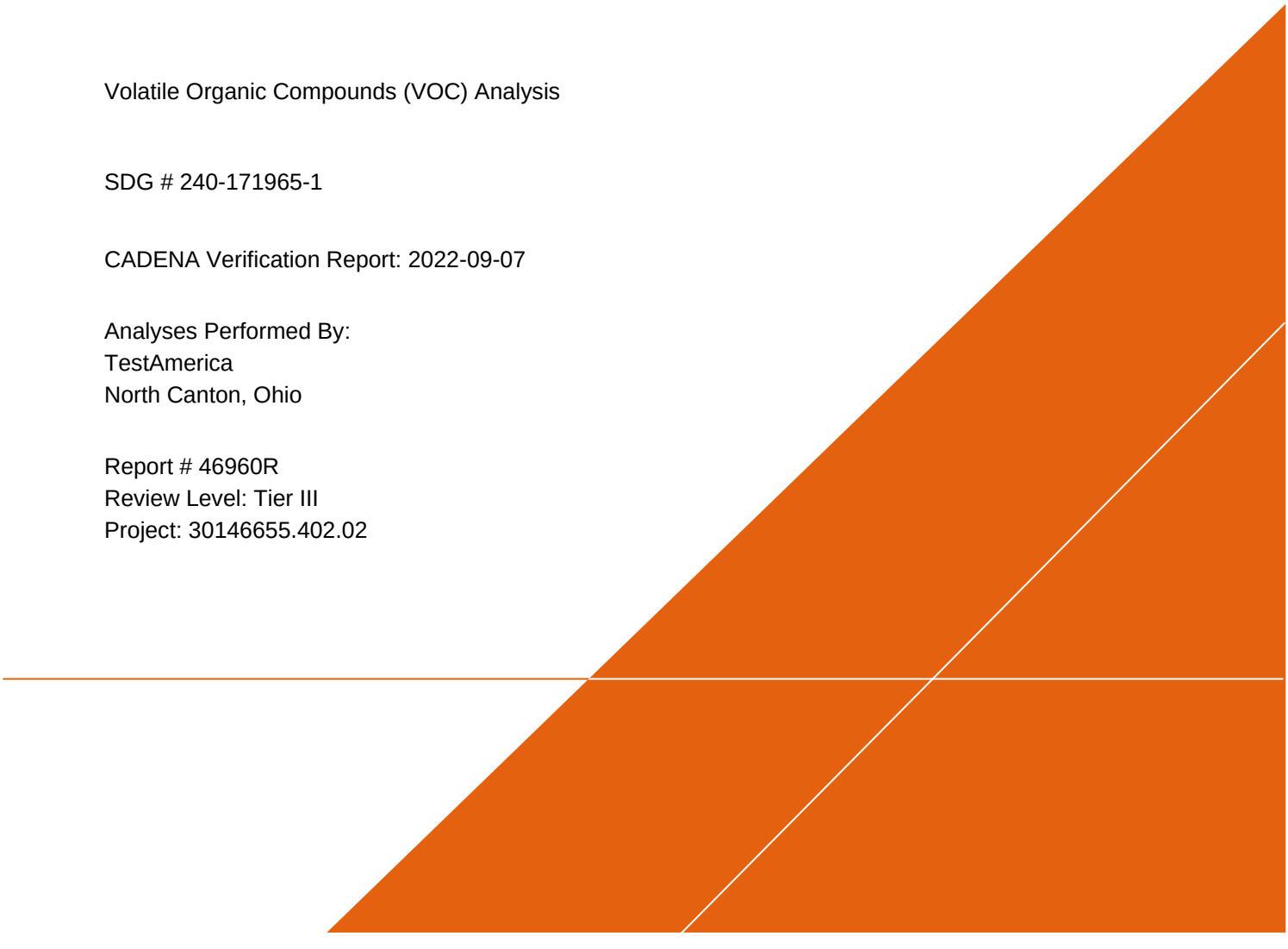
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171965-1

CADENA Verification Report: 2022-09-07

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46960R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171965-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_18	240-171965-1	Water	08/19/22		X	
MW-72_081922	240-171965-2	Water	08/19/22		X	X
MW-226_081922	240-171965-3	Water	08/19/22		X	X
MW-226D_081922	240-171965-4	Water	08/19/22		X	X
MW-227D_081922	240-171965-5	Water	08/19/22		X	X
DUP-13	240-171965-6	Water	08/19/22	MW-72_081922	X	X
DUP-14	240-171965-7	Water	08/19/22	MW-226D_081922	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

DATA REVIEW

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-72_081922 / DUP-13	Vinyl chloride	1.7	1.2	AC
MW-226D_081922 / DUP-14	All target compounds	U	U	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MIGAN '90 39/39

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9781	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT (if different from below): 10 day — 2 weeks, 1 week, 2 days, 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No.:
Project Number: 30080642.402.04				
PO #: 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: HCl	Filtered Sample (Y / N)	Composite-C / Grab-G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_18	8/19/22	—		X				1	N	G	X	X	X	X	X	X		1 Trip Blank
MW-72_081922	08/19/22	10:06		X				6	N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-226_081922	08/19/22	11:21		X				6	N	G	X	X	X	X	X	X	X	
MW-226D_081922	08/19/22	12:21		X				6	N	G	X	X	X	X	X	X	X	
MW-227D_081922	08/19/22	1336		X				6	N	G	X	X	X	X	X	X	X	
MW-227D-MS_081922	08/19/22	1336		X				6	N	G	X	X	X	X	X	X	X	
MW-227D-MSD_081922	08/19/22	1336		X				6	N	G	X	X	X	X	X	X	X	
DUP-13	08/19/22	—		X				6	N	G	X	X	X	X	X	X	X	
DUP-14	08/19/22	—		X				6	N	G	X	X	X	X	X	X	X	

Revised COC on 8/26/22
Correction Preservatives on DUP-13 and DUP-14 and HCL -C.Weaver

240-171965 Chain of Custody

Possible Hazard Identification: Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client, Disposal By Lab, Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Commercial Row & Residential Row : BELDEN, ORANGE LAWN, ELMIRA
Send results through Caitlyn at jhartsel@cadencesc.com Cadena #E35811
Level of Reporting requested:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/19/22 1634	Novi COLD Storage	Arcadis	8/19/22 1634
[signature]	ARCADIS	8/22/22 1120	[signature]	Eurofins	8/22/22 1120
[signature]	Eurofins	8/22/22	[signature]	TESTING	8-22-22 930

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: TRIP BLANK_18
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 16:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/26/22 16:38*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 16:38*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/26/22 16:38*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/26/22 16:38*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-72_081922
Date Collected: 08/19/22 10:06
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 03:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/30/22 03:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:02	1
Vinyl chloride	**1.7**		1.0	0.45	ug/L			08/26/22 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/26/22 17:02*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 17:02*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 17:02*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/26/22 17:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-226_081922
Date Collected: 08/19/22 11:21
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 03:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/30/22 03:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 17:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 17:27*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/26/22 17:27*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 17:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-226D_081922

Date Collected: 08/19/22 12:21
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 03:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/30/22 03:58*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/26/22 17:51*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/26/22 17:51*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/26/22 17:51*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/26/22 17:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: MW-227D_081922
Date Collected: 08/19/22 13:36
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 07:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/27/22 07:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 18:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 18:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 18:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 18:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 18:15*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/26/22 18:15*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/26/22 18:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 18:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: DUP-13
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 04:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/30/22 04:22*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:39	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			08/26/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 18:39*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 18:39*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/26/22 18:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171965-1

Client Sample ID: DUP-14
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171965-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*08/30/22 04:46*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 19:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 19:03*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/26/22 19:03*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/26/22 19:03*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/26/22 19:03*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171972-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 9:08:53 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Job ID: 240-171972-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171972-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171972-1	TRIP BLANK_89	Water	08/17/22 00:00	08/23/22 09:30
240-171972-2	MW-76S_081722	Water	08/17/22 09:46	08/23/22 09:30
240-171972-3	MW-76_081722	Water	08/17/22 11:16	08/23/22 09:30
240-171972-4	MW-132S_081822	Water	08/18/22 12:01	08/23/22 09:30
240-171972-5	MW-131S_081822	Water	08/18/22 13:16	08/23/22 09:30
240-171972-6	MW-105S_081822	Water	08/18/22 14:31	08/23/22 09:30
240-171972-7	DUP-11	Water	08/18/22 00:00	08/23/22 09:30
240-171972-8	MW-72S_081822	Water	08/18/22 16:16	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: TRIP BLANK_89 — Lab Sample ID: 240-171972-1

No Detections.

Client Sample ID: MW-76S_081722 — Lab Sample ID: 240-171972-2

No Detections.

Client Sample ID: MW-76_081722 — Lab Sample ID: 240-171972-3

No Detections.

Client Sample ID: MW-132S_081822 — Lab Sample ID: 240-171972-4

No Detections.

Client Sample ID: MW-131S_081822 — Lab Sample ID: 240-171972-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.63	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-105S_081822 — Lab Sample ID: 240-171972-6

No Detections.

Client Sample ID: DUP-11 — Lab Sample ID: 240-171972-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.66	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-72S_081822 — Lab Sample ID: 240-171972-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: TRIP BLANK_89

Date Collected: 08/17/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 17:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 17:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/29/22 17:29*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/29/22 17:29*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/29/22 17:29*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/29/22 17:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-76S_081722
Date Collected: 08/17/22 09:46
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 22:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/26/22 22:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 17:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 17:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 17:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/29/22 17:53*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/29/22 17:53*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/29/22 17:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/29/22 17:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-76_081722

Date Collected: 08/17/22 11:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 21:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 18:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 18:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 18:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 18:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 18:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/29/22 18:18*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/29/22 18:18*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/29/22 18:18*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/29/22 18:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-132S_081822
Date Collected: 08/18/22 12:01
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/26/22 23:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 19:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 19:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 19:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 19:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 19:31*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 19:31*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/29/22 19:31*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/29/22 19:31*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-131S_081822
Date Collected: 08/18/22 13:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 23:36*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 19:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 19:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 19:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:56	1
Vinyl chloride	**0.63**	**J**	1.0	0.45	ug/L			08/29/22 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 19:56*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 19:56*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/29/22 19:56*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/29/22 19:56*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-105S_081822
Date Collected: 08/18/22 14:31
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 00:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/27/22 00:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 20:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 20:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 20:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 20:20*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 20:20*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/29/22 20:20*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/29/22 20:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: DUP-11
Date Collected: 08/18/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 00:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/27/22 00:26*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:45	1
Vinyl chloride	**0.66**	**J**	1.0	0.45	ug/L			08/29/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 20:45*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/29/22 20:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/29/22 20:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-72S_081822
Date Collected: 08/18/22 16:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-8
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 00:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/27/22 00:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 21:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 21:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 21:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 21:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 21:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/29/22 21:09*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/29/22 21:09*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/29/22 21:09*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/29/22 21:09*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171972-1	TRIP BLANK_89	97	87	96	98
240-171972-2	MW-76S_081722	97	87	95	97
240-171972-3	MW-76_081722	97	87	94	98
240-171972-3 MS	MW-76-MS_081722	96	88	95	98
240-171972-3 MSD	MW-76-MSD_081722	98	92	97	100
240-171972-4	MW-132S_081822	99	90	97	100
240-171972-5	MW-131S_081822	99	90	97	100
240-171972-6	MW-105S_081822	99	90	97	100
240-171972-7	DUP-11	99	90	96	99
240-171972-8	MW-72S_081822	102	91	98	103
LCS 240-540494/5	Lab Control Sample	92	90	95	96
MB 240-540494/9	Method Blank	96	89	94	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171972-2	MW-76S_081722	87
240-171972-3	MW-76_081722	88
240-171972-3 MS	MW-76-MS_081722	88
240-171972-3 MSD	MW-76-MSD_081722	87
240-171972-4	MW-132S_081822	85
240-171972-5	MW-131S_081822	88
240-171972-6	MW-105S_081822	89
240-171972-7	DUP-11	87
240-171972-8	MW-72S_081822	89
LCS 240-540388/3	Lab Control Sample	92
MB 240-540388/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540494/9
Matrix: Water
Analysis Batch: 540494

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 12:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 12:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 12:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 12:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 12:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 12:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/29/22 12:59*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/29/22 12:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/29/22 12:59*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/29/22 12:59*	*1*

Lab Sample ID: LCS 240-540494/5
Matrix: Water
Analysis Batch: 540494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.8		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	19.5		ug/L		98	77 - 123
Tetrachloroethene	20.0	17.2		ug/L		86	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	18.7		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171972-3 MS
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-76-MS_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	20.3		ug/L		102	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.8		ug/L		99	66 - 128
Tetrachloroethene	1.0	U	20.0	17.3		ug/L		86	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		97	56 - 136
Trichloroethene	1.0	U	20.0	19.5		ug/L		98	61 - 124
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171972-3 MS
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-76-MS_081722
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-171972-3 MSD
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-76-MSD_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	21.0		ug/L		105	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	20.5		ug/L		102	66 - 128	3	14
Tetrachloroethene	1.0	U	20.0	17.7		ug/L		88	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.9		ug/L		99	56 - 136	3	15
Trichloroethene	1.0	U	20.0	19.6		ug/L		98	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	18.5		ug/L		92	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540388/4
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 18:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/26/22 18:32*	*1*

Lab Sample ID: LCS 240-540388/3
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*

Lab Sample ID: 240-171972-3 MS
Matrix: Water
Analysis Batch: 540388

Client Sample ID: MW-76-MS_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

Lab Sample ID: 240-171972-3 MSD
Matrix: Water
Analysis Batch: 540388

Client Sample ID: MW-76-MSD_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.5		ug/L		115	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Client: ARCADIS U.S., Inc.
Job ID: 240-171972-1
Project/Site: Ford LTP - Off Site

GC/MS VOA

Analysis Batch: 540388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171972-2	MW-76S_081722	Total/NA	Water	8260D SIM	
240-171972-3	MW-76_081722	Total/NA	Water	8260D SIM	
240-171972-4	MW-132S_081822	Total/NA	Water	8260D SIM	
240-171972-5	MW-131S_081822	Total/NA	Water	8260D SIM	
240-171972-6	MW-105S_081822	Total/NA	Water	8260D SIM	
240-171972-7	DUP-11	Total/NA	Water	8260D SIM	
240-171972-8	MW-72S_081822	Total/NA	Water	8260D SIM	
MB 240-540388/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540388/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171972-3 MS	MW-76-MS_081722	Total/NA	Water	8260D SIM	
240-171972-3 MSD	MW-76-MSD_081722	Total/NA	Water	8260D SIM	

Analysis Batch: 540494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171972-1	TRIP BLANK_89	Total/NA	Water	8260D	
240-171972-2	MW-76S_081722	Total/NA	Water	8260D	
240-171972-3	MW-76_081722	Total/NA	Water	8260D	
240-171972-4	MW-132S_081822	Total/NA	Water	8260D	
240-171972-5	MW-131S_081822	Total/NA	Water	8260D	
240-171972-6	MW-105S_081822	Total/NA	Water	8260D	
240-171972-7	DUP-11	Total/NA	Water	8260D	
240-171972-8	MW-72S_081822	Total/NA	Water	8260D	
MB 240-540494/9	Method Blank	Total/NA	Water	8260D	
LCS 240-540494/5	Lab Control Sample	Total/NA	Water	8260D	
240-171972-3 MS	MW-76-MS_081722	Total/NA	Water	8260D	
240-171972-3 MSD	MW-76-MSD_081722	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: TRIP BLANK_89
Date Collected: 08/17/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 17:29

Client Sample ID: MW-76S_081722
Date Collected: 08/17/22 09:46
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 17:53
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/26/22 22:45

Client Sample ID: MW-76_081722
Date Collected: 08/17/22 11:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 18:18
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/26/22 21:29

Client Sample ID: MW-132S_081822
Date Collected: 08/18/22 12:01
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 19:31
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/26/22 23:11

Client Sample ID: MW-131S_081822
Date Collected: 08/18/22 13:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 19:56
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/26/22 23:36

Client Sample ID: MW-105S_081822
Date Collected: 08/18/22 14:31
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 20:20
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 00:01

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: DUP-11

Date Collected: 08/18/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 20:45
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 00:26

Client Sample ID: MW-72S_081822

Date Collected: 08/18/22 16:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 21:09
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 00:52

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_89	8/17/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-765-081722	08/17/22	0946		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-76-081722	08/17/22	1116		X						6					N	G	X	X	X	X	X	X	X	
MW-76-MS-081722	08/17/22	1116		X						6					N	G	X	X	X	X	X	X	X	
MW-76-MSD-081722	08/17/22	1116		X						6					N	G	X	X	X	X	X	X	X	
MW-1325-081822	08/18/22	1201		X						6					N	G	X	X	X	X	X	X	X	
MW-1315-081822	08/18/22	1316		X						6					N	G	X	X	X	X	X	X	X	
MW-1055-081822	08/18/22	1431		X						6					N	G	X	X	X	X	X	X	X	
DUP-11	08/18/22	—		X						6					N	G	X	X	X	X	X	X	X	
MW-725-081822	08/18/22	1616		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Commerical Row & PLYMOUTH, ROSATI, BELDEN
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	8/19/22 1635	Novi cold storage	Arcadis	8/19/22 1635
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	Eurofins	8/23/22	Rachel Hamlin	TEKK	8/23/22 9:30

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9/2/2022

240-171972 Chain of Custody

Eurofins - Canton Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler (Box) Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? (Yes) No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 286793
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 IR-15	3.9	3.9	Wet Ice Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 IR-15	4.1	4.1	Wet Ice Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 IR-15	3.9	3.9	Wet Ice Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 IR-15	2.7	2.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

September 04, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171972-1
Sample date: 2022-08-18 2022-08-17
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-04
Number of Samples:8
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171972-1

	Sample Name:	TRIP BLANK_89				MW-76S_081722				MW-76_081722				MW-132S_081822				MW-131S_081822				MW-105S_081822				DUP-11				MW-72S_081822			
	Lab Sample ID:	2401719721				2401719722				2401719723				2401719724				2401719725				2401719726				2401719727				2401719728			
	Sample Date:	8/17/2022				8/17/2022				8/17/2022				8/18/2022				8/18/2022				8/18/2022				8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																																	
OSW-8260D																																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.63	1.0	ug/l	J	ND	1.0	ug/l	---	0.66	1.0	ug/l	J	ND	1.0	ug/l	---
OSW-8260DSIM																																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

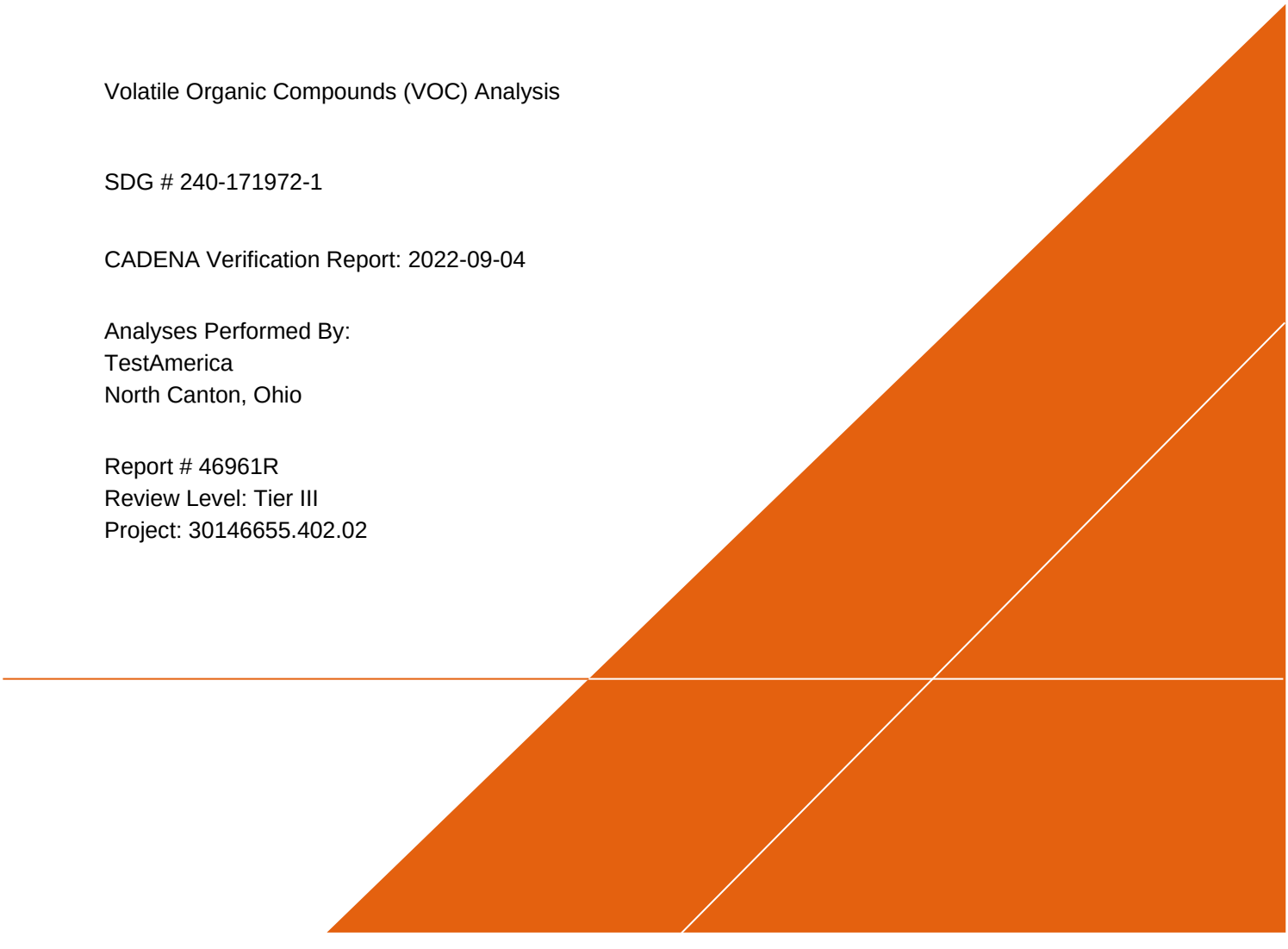
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171972-1

CADENA Verification Report: 2022-09-04

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46961R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171972-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_89	240-171972-1	Water	08/17/22		X	
MW-76S_081722	240-171972-2	Water	08/17/22		X	X
MW-76_081722	240-171972-3	Water	08/17/22		X	X
MW-132S_081822	240-171972-4	Water	08/18/22		X	X
MW-131S_081822	240-171972-5	Water	08/18/22		X	X
MW-105S_081822	240-171972-6	Water	08/18/22		X	X
DUP-11	240-171972-7	Water	08/18/22	MW-131S_081822	X	X
MW-72S_081822	240-171972-8	Water	08/18/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-131S_081822 / DUP-11	Vinyl chloride	0.63 J	0.66 J	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_89	8/17/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-765-081722	08/17/22	0946		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-76-081722	08/17/22	1116		X						6					N	G	X	X	X	X	X	X	X	
MW-76-MS-081722	08/17/22	1116		X						6					N	G	X	X	X	X	X	X	X	
MW-76-MSD-081722	08/17/22	1116		X						6					N	G	X	X	X	X	X	X	X	
MW-1325-081822	08/18/22	1201		X						6					N	G	X	X	X	X	X	X	X	
MW-1315-081822	08/18/22	1316		X						6					N	G	X	X	X	X	X	X	X	
MW-1055-081822	08/18/22	1431		X						6					N	G	X	X	X	X	X	X	X	
DUP-11	08/18/22	—		X						6					N	G	X	X	X	X	X	X	X	
MW-725-081822	08/18/22	1616		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Commerical Row & PLYMOUTH, ROSATI, BELDEN
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	8/19/22 1635	Novi cold storage	Arcadis	8/19/22 1635
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	Eurofins	8/23/22	Rachel Hamlin	TEKTX	8/23/22 9:30

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9/2/2022

240-171972 Chain of Custody

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: TRIP BLANK_89

Date Collected: 08/17/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 17:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 17:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/29/22 17:29*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/29/22 17:29*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/29/22 17:29*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/29/22 17:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-76S_081722
Date Collected: 08/17/22 09:46
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 22:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/26/22 22:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 17:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 17:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 17:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/29/22 17:53*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/29/22 17:53*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/29/22 17:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/29/22 17:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-76_081722

Date Collected: 08/17/22 11:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 21:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 18:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 18:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 18:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 18:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 18:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/29/22 18:18*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/29/22 18:18*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/29/22 18:18*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/29/22 18:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-132S_081822
Date Collected: 08/18/22 12:01
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/26/22 23:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 19:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 19:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 19:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 19:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 19:31*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 19:31*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/29/22 19:31*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/29/22 19:31*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-131S_081822
Date Collected: 08/18/22 13:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 23:36*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 19:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 19:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 19:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 19:56	1
Vinyl chloride	**0.63**	**J**	1.0	0.45	ug/L			08/29/22 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 19:56*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 19:56*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/29/22 19:56*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/29/22 19:56*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-105S_081822
Date Collected: 08/18/22 14:31
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 00:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/27/22 00:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 20:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 20:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 20:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 20:20*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 20:20*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/29/22 20:20*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/29/22 20:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: DUP-11
Date Collected: 08/18/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 00:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/27/22 00:26*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 20:45	1
Vinyl chloride	**0.66**	**J**	1.0	0.45	ug/L			08/29/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/29/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 20:45*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/29/22 20:45*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/29/22 20:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171972-1

Client Sample ID: MW-72S_081822
Date Collected: 08/18/22 16:16
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171972-8
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 00:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/27/22 00:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 21:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 21:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 21:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 21:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 21:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/29/22 21:09*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/29/22 21:09*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/29/22 21:09*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/29/22 21:09*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171412-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:37:47 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Job ID: 240-171412-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171412-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2022 3:11 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 3.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171412-1	TRIP BLANK_160	Water	08/08/22 00:00	08/11/22 15:11
240-171412-2	MW-81_080822	Water	08/08/22 13:16	08/11/22 15:11
240-171412-3	MW-81S_080822	Water	08/08/22 14:51	08/11/22 15:11
240-171412-4	MW-99S_080922	Water	08/09/22 10:31	08/11/22 15:11
240-171412-5	MW-73SR_080922	Water	08/09/22 12:01	08/11/22 15:11
240-171412-6	MW-73D_080922	Water	08/09/22 13:31	08/11/22 15:11
240-171412-7	MW-75SR_080922	Water	08/09/22 15:16	08/11/22 15:11
240-171412-8	MW-75D_080922	Water	08/09/22 17:06	08/11/22 15:11

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: TRIP BLANK_160 — Lab Sample ID: 240-171412-1

No Detections.

Client Sample ID: MW-81_080822 — Lab Sample ID: 240-171412-2

No Detections.

Client Sample ID: MW-81S_080822 — Lab Sample ID: 240-171412-3

No Detections.

Client Sample ID: MW-99S_080922 — Lab Sample ID: 240-171412-4

No Detections.

Client Sample ID: MW-73SR_080922 — Lab Sample ID: 240-171412-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.1		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-73D_080922 — Lab Sample ID: 240-171412-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.3		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-75SR_080922 — Lab Sample ID: 240-171412-7

No Detections.

Client Sample ID: MW-75D_080922 — Lab Sample ID: 240-171412-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.2		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: TRIP BLANK_160
Date Collected: 08/08/22 00:00
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 13:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 13:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 13:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/15/22 13:05*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/15/22 13:05*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/15/22 13:05*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/15/22 13:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-81_080822
Date Collected: 08/08/22 13:16
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 02:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/16/22 02:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 14:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 14:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 14:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/15/22 14:16*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/15/22 14:16*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/15/22 14:16*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/15/22 14:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-81S_080822

Date Collected: 08/08/22 14:51
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/16/22 03:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 14:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 14:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/15/22 14:40*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/15/22 14:40*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/15/22 14:40*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/15/22 14:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-99S_080922
Date Collected: 08/09/22 10:31
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 03:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/16/22 03:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/15/22 15:03*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/15/22 15:03*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/15/22 15:03*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/15/22 15:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-73SR_080922
Date Collected: 08/09/22 12:01
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 04:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/16/22 04:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:27	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.46	ug/L			08/15/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/15/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/15/22 15:27*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/15/22 15:27*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/15/22 15:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-73D_080922

Date Collected: 08/09/22 13:31
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-6

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.3		2.0	0.86	ug/L			08/16/22 04:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/16/22 04:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/15/22 15:51*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/15/22 15:51*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/15/22 15:51*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 15:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-75SR_080922
Date Collected: 08/09/22 15:16
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 04:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/16/22 04:58*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/15/22 16:14*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/15/22 16:14*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/15/22 16:14*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 16:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-75D_080922
Date Collected: 08/09/22 17:06
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-8
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			08/16/22 05:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/16/22 05:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:38	1
Vinyl chloride	2.1		1.0	0.45	ug/L			08/15/22 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/15/22 16:38*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/15/22 16:38*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/15/22 16:38*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/15/22 16:38*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171412-1	TRIP BLANK_160	86	87	95	94
240-171412-2	MW-81_080822	90	86	91	95
240-171412-2 MS	MW-81-MS_080822	86	92	97	95
240-171412-2 MSD	MW-81-MSD_080822	87	94	98	95
240-171412-3	MW-81S_080822	88	84	93	98
240-171412-4	MW-99S_080922	88	85	92	95
240-171412-5	MW-73SR_080922	92	86	97	98
240-171412-6	MW-73D_080922	97	93	99	103
240-171412-7	MW-75SR_080922	94	91	99	102
240-171412-8	MW-75D_080922	92	95	103	101
LCS 240-538850/5	Lab Control Sample	81	91	99	91
MB 240-538850/8	Method Blank	87	89	96	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171412-2	MW-81_080822	87
240-171412-2 MS	MW-81-MS_080822	89
240-171412-2 MSD	MW-81-MSD_080822	86
240-171412-3	MW-81S_080822	86
240-171412-4	MW-99S_080922	88
240-171412-5	MW-73SR_080922	89
240-171412-6	MW-73D_080922	89
240-171412-7	MW-75SR_080922	84
240-171412-8	MW-75D_080922	86
LCS 240-538971/3	Lab Control Sample	85
MB 240-538971/4	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538850/8
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 12:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 12:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 12:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 12:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/15/22 12:17*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/15/22 12:17*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/15/22 12:17*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/15/22 12:17*	*1*

Lab Sample ID: LCS 240-538850/5
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.6		ug/L		95	63 - 134
cis-1,2-Dichloroethene	25.0	22.7		ug/L		91	77 - 123
Tetrachloroethene	25.0	29.5		ug/L		118	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	25.6		ug/L		102	70 - 122
Vinyl chloride	25.0	20.7		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-171412-2 MS
Matrix: Water
Analysis Batch: 538850

Client Sample ID: MW-81-MS_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128
Tetrachloroethene	1.0	U	25.0	29.3		ug/L		117	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	25.9		ug/L		104	61 - 124
Vinyl chloride	1.0	U	25.0	20.4		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171412-2 MS
Matrix: Water
Analysis Batch: 538850

Client Sample ID: MW-81-MS_080822
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171412-2 MSD
Matrix: Water
Analysis Batch: 538850

Client Sample ID: MW-81-MSD_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.3		ug/L		97	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		95	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	30.9		ug/L		124	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136	0	15
Trichloroethene	1.0	U	25.0	26.3		ug/L		105	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538971/4
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 20:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/15/22 20:58*	*1*

Lab Sample ID: LCS 240-538971/3
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.74		ug/L		97	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171412-2 MS
Matrix: Water
Analysis Batch: 538971

Client Sample ID: MW-81-MS_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171412-2 MSD
Matrix: Water
Analysis Batch: 538971

Client Sample ID: MW-81-MSD_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

GC/MS VOA

Analysis Batch: 538850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171412-1	TRIP BLANK_160	Total/NA	Water	8260D	
240-171412-2	MW-81_080822	Total/NA	Water	8260D	
240-171412-3	MW-81S_080822	Total/NA	Water	8260D	
240-171412-4	MW-99S_080922	Total/NA	Water	8260D	
240-171412-5	MW-73SR_080922	Total/NA	Water	8260D	
240-171412-6	MW-73D_080922	Total/NA	Water	8260D	
240-171412-7	MW-75SR_080922	Total/NA	Water	8260D	
240-171412-8	MW-75D_080922	Total/NA	Water	8260D	
MB 240-538850/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538850/5	Lab Control Sample	Total/NA	Water	8260D	
240-171412-2 MS	MW-81-MS_080822	Total/NA	Water	8260D	
240-171412-2 MSD	MW-81-MSD_080822	Total/NA	Water	8260D	

Analysis Batch: 538971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171412-2	MW-81_080822	Total/NA	Water	8260D SIM	
240-171412-3	MW-81S_080822	Total/NA	Water	8260D SIM	
240-171412-4	MW-99S_080922	Total/NA	Water	8260D SIM	
240-171412-5	MW-73SR_080922	Total/NA	Water	8260D SIM	
240-171412-6	MW-73D_080922	Total/NA	Water	8260D SIM	
240-171412-7	MW-75SR_080922	Total/NA	Water	8260D SIM	
240-171412-8	MW-75D_080922	Total/NA	Water	8260D SIM	
MB 240-538971/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538971/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171412-2 MS	MW-81-MS_080822	Total/NA	Water	8260D SIM	
240-171412-2 MSD	MW-81-MSD_080822	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: TRIP BLANK_160
Lab Sample ID: 240-171412-1
Date Collected: 08/08/22 00:00
Matrix: Water
Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 13:05

Client Sample ID: MW-81_080822
Lab Sample ID: 240-171412-2
Date Collected: 08/08/22 13:16
Matrix: Water
Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 14:16
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 02:01

Client Sample ID: MW-81S_080822
Lab Sample ID: 240-171412-3
Date Collected: 08/08/22 14:51
Matrix: Water
Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 14:40
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 03:17

Client Sample ID: MW-99S_080922
Lab Sample ID: 240-171412-4
Date Collected: 08/09/22 10:31
Matrix: Water
Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 15:03
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 03:42

Client Sample ID: MW-73SR_080922
Lab Sample ID: 240-171412-5
Date Collected: 08/09/22 12:01
Matrix: Water
Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 15:27
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 04:07

Client Sample ID: MW-73D_080922
Lab Sample ID: 240-171412-6
Date Collected: 08/09/22 13:31
Matrix: Water
Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 15:51
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 04:33

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-75SR_080922

Lab Sample ID: 240-171412-7

Date Collected: 08/09/22 15:16

Matrix: Water

Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 16:14
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 04:58

Client Sample ID: MW-75D_080922

Lab Sample ID: 240-171412-8

Date Collected: 08/09/22 17:06

Matrix: Water

Date Received: 08/11/22 15:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 16:38
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 05:23

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_160	8/8/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-81-080822	08/08/22	1316		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-81-MS_080822	08/08/22	1316		X						6					N	G	X	X	X	X	X	X	X	
MW-81-MSD_080822	08/08/22	1316		X						6					N	G	X	X	X	X	X	X	X	
MW-81S_080822	08/08/22	1451		X						6					N	G	X	X	X	X	X	X	X	
MW-99S_080922	08/09/22	10:31		X						6					N	G	X	X	X	X	X	X	X	
MW-73SR_080922	08/09/22	12:01		X						6					N	G	X	X	X	X	X	X	X	
MW-73D_080922	08/09/22	13:31		X						6					N	G	X	X	X	X	X	X	X	
MW-75SR_080922	08/09/22	15:16		X						6					N	G	X	X	X	X	X	X	X	
MW-75D_080922	08/09/22	17:06		X						6					N	G	X	X	X	X	X	X	X	

240-171412 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: ROW: STARK, BELDEN,
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	08/09/22 1838	Novi Cold Storage	Arcadis	08/09/22 1838
Relinquished by: [signature]	Company: ARCADIS	Date/Time: 8/10/22 0935	Received by: [signature]	Company: EETA	Date/Time: 8/10/22 0935
Relinquished by: [signature]	Company: EETA	Date/Time: 8/10/22 938	Received in Laboratory by: [signature]	Company: EEN	Date/Time: 8-11-22 930

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Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171412**
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-11-22 Opened on 8-11-22

Cooler unpacked by: Matt

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # (1) Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171412

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	1.7	2.4	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171412-1
Sample date: 2022-08-09 2022-08-08
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:8
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171412-1

		Sample Name:	TRIP BLANK_160				MW-81_080822				MW-81S_080822				MW-99S_080922				MW-73SR_080922				MW-73D_080922				MW-75SR_080922				MW-75D_080922			
		Lab Sample ID:	2401714121				2401714122				2401714123				2401714124				2401714125				2401714126				2401714127				2401714128			
		Sample Date:	8/8/2022				8/8/2022				8/8/2022				8/9/2022				8/9/2022				8/9/2022				8/9/2022				8/9/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																																		
OSW-8260D																																		
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.1	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.1	1.0	ug/l	---
OSW-8260DSIM																																		
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	2.3	2.0	ug/l	---	ND	2.0	ug/l	---	2.2	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

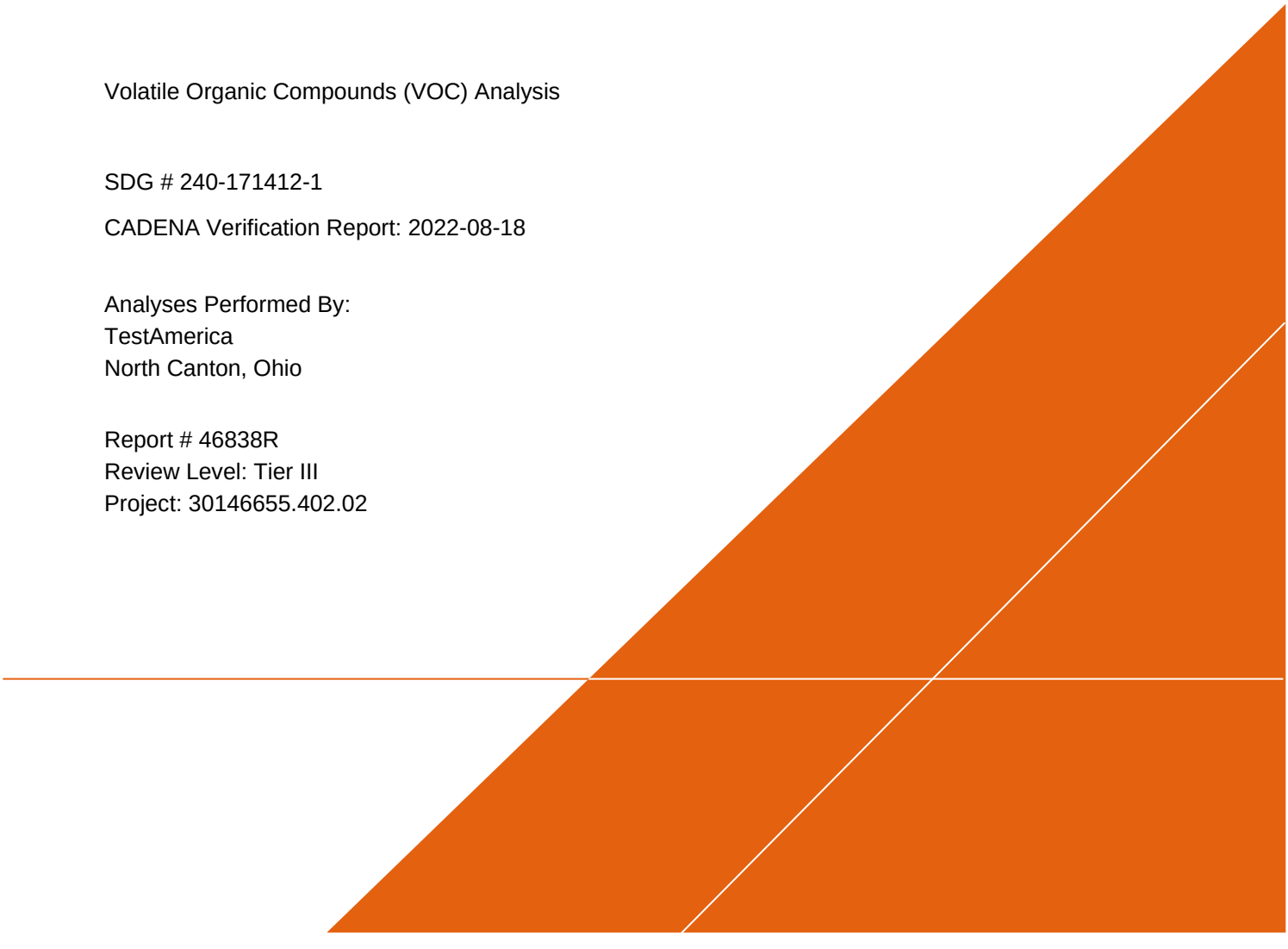
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171412-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46838R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171412-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_160	240-171412-1	Water	08/08/22		X	
MW-81_080822	240-171412-2	Water	08/08/22		X	X
MW-81S_080822	240-171412-3	Water	08/08/22		X	X
MW-99S_080922	240-171412-4	Water	08/09/22		X	X
MW-73SR_080922	240-171412-5	Water	08/09/22		X	X
MW-73D_080922	240-171412-6	Water	08/09/22		X	X
MW-75SR_080922	240-171412-7	Water	08/09/22		X	X
MW-75D_080922	240-171412-8	Water	08/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 23, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_160	8/8/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-81-080822	08/08/22	1316		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-81-MS_080822	08/08/22	1316		X						6					N	G	X	X	X	X	X	X	X	
MW-81-MSD_080822	08/08/22	1316		X						6					N	G	X	X	X	X	X	X	X	
MW-81S_080822	08/08/22	1451		X						6					N	G	X	X	X	X	X	X	X	
MW-99S_080922	08/09/22	10:31		X						6					N	G	X	X	X	X	X	X	X	
MW-73SR_080922	08/09/22	12:01		X						6					N	G	X	X	X	X	X	X	X	
MW-73D_080922	08/09/22	13:31		X						6					N	G	X	X	X	X	X	X	X	
MW-75SR_080922	08/09/22	15:16		X						6					N	G	X	X	X	X	X	X	X	
MW-75D_080922	08/09/22	17:06		X						6					N	G	X	X	X	X	X	X	X	

240-171412 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: ROW: STARK, BELDEN,
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	08/09/22 1838	Novi Cold Storage	Arcadis	08/09/22 1838
Relinquished by: [signature]	Company: ARCADIS	Date/Time: 8/10/22 0935	Received by: [signature]	Company: EETA	Date/Time: 8/10/22 0935
Relinquished by: [signature]	Company: EETA	Date/Time: 8/10/22 938	Received in Laboratory by: [signature]	Company: EEN	Date/Time: 8-11-22 930

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: TRIP BLANK_160
Date Collected: 08/08/22 00:00
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 13:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 13:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 13:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/15/22 13:05*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/15/22 13:05*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/15/22 13:05*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/15/22 13:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-81_080822
Date Collected: 08/08/22 13:16
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 02:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/16/22 02:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 14:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 14:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 14:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/15/22 14:16*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/15/22 14:16*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/15/22 14:16*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/15/22 14:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-81S_080822

Date Collected: 08/08/22 14:51
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/16/22 03:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 14:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 14:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/15/22 14:40*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/15/22 14:40*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/15/22 14:40*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/15/22 14:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-99S_080922
Date Collected: 08/09/22 10:31
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 03:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/16/22 03:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/15/22 15:03*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/15/22 15:03*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/15/22 15:03*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/15/22 15:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-73SR_080922
Date Collected: 08/09/22 12:01
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 04:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/16/22 04:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:27	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.46	ug/L			08/15/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/15/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/15/22 15:27*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/15/22 15:27*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/15/22 15:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-73D_080922

Date Collected: 08/09/22 13:31
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-6

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.3		2.0	0.86	ug/L			08/16/22 04:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/16/22 04:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 15:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 15:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 15:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 15:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/15/22 15:51*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/15/22 15:51*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/15/22 15:51*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/15/22 15:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-75SR_080922
Date Collected: 08/09/22 15:16
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 04:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/16/22 04:58*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 16:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 16:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 16:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/15/22 16:14*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/15/22 16:14*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/15/22 16:14*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/15/22 16:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171412-1

Client Sample ID: MW-75D_080922
Date Collected: 08/09/22 17:06
Date Received: 08/11/22 15:11

Lab Sample ID: 240-171412-8
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			08/16/22 05:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/16/22 05:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 16:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 16:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 16:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 16:38	1
Vinyl chloride	2.1		1.0	0.45	ug/L			08/15/22 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/15/22 16:38*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/15/22 16:38*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/15/22 16:38*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/15/22 16:38*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171152-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:30:09 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Job ID: 240-171152-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171152-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-74S_080322 (240-171152-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171152-1	TRIP BLANK_58	Water	08/03/22 00:00	08/06/22 10:00
240-171152-2	MW-97S_080322	Water	08/03/22 10:26	08/06/22 10:00
240-171152-3	MW-227S_080322	Water	08/03/22 12:06	08/06/22 10:00
240-171152-4	MW-74S_080322	Water	08/03/22 13:51	08/06/22 10:00
240-171152-5	MW-74_080322	Water	08/03/22 14:46	08/06/22 10:00
240-171152-6	MW-226S_080322	Water	08/03/22 16:26	08/06/22 10:00
240-171152-7	MW-227_080422	Water	08/04/22 14:01	08/06/22 10:00
240-171152-8	DUP-12	Water	08/03/22 00:00	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: TRIP BLANK_58 — Lab Sample ID: 240-171152-1

No Detections.

Client Sample ID: MW-97S_080322 — Lab Sample ID: 240-171152-2

No Detections.

Client Sample ID: MW-227S_080322 — Lab Sample ID: 240-171152-3

No Detections.

Client Sample ID: MW-74S_080322 — Lab Sample ID: 240-171152-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.79	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-74_080322 — Lab Sample ID: 240-171152-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-226S_080322 — Lab Sample ID: 240-171152-6

No Detections.

Client Sample ID: MW-227_080422 — Lab Sample ID: 240-171152-7

No Detections.

Client Sample ID: DUP-12 — Lab Sample ID: 240-171152-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.0	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	3.0		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: TRIP BLANK_58
Date Collected: 08/03/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 17:47*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 17:47*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 17:47*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/10/22 17:47*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: MW-97S_080322
Date Collected: 08/03/22 10:26
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 02:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/12/22 02:32*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 21:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 21:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 21:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 21:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*08/10/22 21:07*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 21:07*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/10/22 21:07*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/10/22 21:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: MW-227S_080322
Date Collected: 08/03/22 12:06
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 02:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/12/22 02:58*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 21:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 21:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 21:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 21:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/10/22 21:32*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/10/22 21:32*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 21:32*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/10/22 21:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: MW-74S_080322
Date Collected: 08/03/22 13:51
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			08/12/22 03:23	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/12/22 03:23*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 21:57	1
cis-1,2-Dichloroethene	**0.79**	**J**	1.0	0.46	ug/L			08/10/22 21:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 21:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 21:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/10/22 21:57*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 21:57*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/10/22 21:57*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 21:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: MW-74_080322
Date Collected: 08/03/22 14:46
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			08/12/22 03:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 03:48*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 22:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 22:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 22:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:22	1
Vinyl chloride	2.9		1.0	0.45	ug/L			08/10/22 22:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/10/22 22:22*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 22:22*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/10/22 22:22*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/10/22 22:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: MW-226S_080322
Date Collected: 08/03/22 16:26
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/12/22 04:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 22:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 22:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 22:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 22:47*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 22:47*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/10/22 22:47*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/10/22 22:47*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: MW-227_080422
Date Collected: 08/04/22 14:01
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 04:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/12/22 04:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 23:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 23:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 23:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 23:13*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 23:13*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 23:13*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/10/22 23:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: DUP-12
Date Collected: 08/03/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171152-8
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.0**	**J**	2.0	0.86	ug/L			08/12/22 05:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/12/22 05:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 23:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 23:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 23:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:38	1
Vinyl chloride	**3.0**		1.0	0.45	ug/L			08/10/22 23:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 23:38*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 23:38*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 23:38*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 23:38*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-28 MS	Matrix Spike	83	99	96	87
240-171141-B-28 MSD	Matrix Spike Duplicate	81	95	92	87
240-171152-1	TRIP BLANK_58	91	89	92	91
240-171152-2	MW-97S_080322	84	90	90	87
240-171152-3	MW-227S_080322	92	87	92	91
240-171152-4	MW-74S_080322	92	90	94	89
240-171152-5	MW-74_080322	93	90	93	91
240-171152-6	MW-226S_080322	91	89	94	88
240-171152-7	MW-227_080422	89	89	91	85
240-171152-8	DUP-12	91	89	91	89
LCS 240-538361/4	Lab Control Sample	85	95	95	88
MB 240-538361/6	Method Blank	88	88	91	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171152-2	MW-97S_080322	91
240-171152-3	MW-227S_080322	86
240-171152-4	MW-74S_080322	91
240-171152-5	MW-74_080322	89
240-171152-6	MW-226S_080322	90
240-171152-7	MW-227_080422	92
240-171152-8	DUP-12	90
240-171154-D-2 MS	Matrix Spike	91
240-171154-D-2 MSD	Matrix Spike Duplicate	94
LCS 240-538564/3	Lab Control Sample	93
MB 240-538564/4	Method Blank	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538361/6
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/10/22 16:07*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 16:07*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 16:07*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 16:07*	*1*

Lab Sample ID: LCS 240-538361/4
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.5		ug/L		90	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.5		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.5		ug/L		90	75 - 124
Trichloroethene	25.0	22.4		ug/L		89	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171141-B-28 MS
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	3.3	U	83.3	73.8		ug/L		89	56 - 135
cis-1,2-Dichloroethene	78		83.3	141		ug/L		76	66 - 128
Tetrachloroethene	2.1	J	83.3	71.1		ug/L		83	62 - 131
trans-1,2-Dichloroethene	3.3	U	83.3	72.8		ug/L		87	56 - 136
Trichloroethene	6.3		83.3	72.3		ug/L		79	61 - 124
Vinyl chloride	3.3	U	41.7	36.5		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-28 MS
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	87		73 - 120

Lab Sample ID: 240-171141-B-28 MSD
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	3.3	U	83.3	73.6		ug/L		88	56 - 135	0	26
cis-1,2-Dichloroethene	78		83.3	143		ug/L		78	66 - 128	1	14
Tetrachloroethene	2.1	J	83.3	68.9		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	3.3	U	83.3	72.2		ug/L		87	56 - 136	1	15
Trichloroethene	6.3		83.3	72.4		ug/L		79	61 - 124	0	15
Vinyl chloride	3.3	U	41.7	36.6		ug/L		88	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	92		78 - 122
Dibromofluoromethane (Surr)	87		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538564/4
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/11/22 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120		08/11/22 20:13	1

Lab Sample ID: LCS 240-538564/3
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		66 - 120

Lab Sample ID: 240-171154-D-2 MS
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	61		10.0	75.2	4	ug/L		139	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171154-D-2 MSD
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	61		10.0	74.6	4	ug/L		133	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

GC/MS VOA

Analysis Batch: 538361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171152-1	TRIP BLANK_58	Total/NA	Water	8260D	
240-171152-2	MW-97S_080322	Total/NA	Water	8260D	
240-171152-3	MW-227S_080322	Total/NA	Water	8260D	
240-171152-4	MW-74S_080322	Total/NA	Water	8260D	
240-171152-5	MW-74_080322	Total/NA	Water	8260D	
240-171152-6	MW-226S_080322	Total/NA	Water	8260D	
240-171152-7	MW-227_080422	Total/NA	Water	8260D	
240-171152-8	DUP-12	Total/NA	Water	8260D	
MB 240-538361/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538361/4	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-28 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-28 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171152-2	MW-97S_080322	Total/NA	Water	8260D SIM	
240-171152-3	MW-227S_080322	Total/NA	Water	8260D SIM	
240-171152-4	MW-74S_080322	Total/NA	Water	8260D SIM	
240-171152-5	MW-74_080322	Total/NA	Water	8260D SIM	
240-171152-6	MW-226S_080322	Total/NA	Water	8260D SIM	
240-171152-7	MW-227_080422	Total/NA	Water	8260D SIM	
240-171152-8	DUP-12	Total/NA	Water	8260D SIM	
MB 240-538564/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538564/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171154-D-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171154-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: TRIP BLANK_58
Lab Sample ID: 240-171152-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 17:47

Client Sample ID: MW-97S_080322
Lab Sample ID: 240-171152-2
Date Collected: 08/03/22 10:26
Matrix: Water
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 21:07
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 02:32

Client Sample ID: MW-227S_080322
Lab Sample ID: 240-171152-3
Date Collected: 08/03/22 12:06
Matrix: Water
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 21:32
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 02:58

Client Sample ID: MW-74S_080322
Lab Sample ID: 240-171152-4
Date Collected: 08/03/22 13:51
Matrix: Water
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 21:57
Total/NA	Analysis	8260D SIM		2	538564	CS	EET CAN	08/12/22 03:23

Client Sample ID: MW-74_080322
Lab Sample ID: 240-171152-5
Date Collected: 08/03/22 14:46
Matrix: Water
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 22:22
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 03:48

Client Sample ID: MW-226S_080322
Lab Sample ID: 240-171152-6
Date Collected: 08/03/22 16:26
Matrix: Water
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 22:47
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 04:14

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Client Sample ID: MW-227_080422

Lab Sample ID: 240-171152-7

Date Collected: 08/04/22 14:01

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 23:13
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 04:39

Client Sample ID: DUP-12

Lab Sample ID: 240-171152-8

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 23:38
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 05:04

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171152-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Telephone: 269-832-7478			
Phone: 248-994-2240	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Project Name: Ford LTP Off-Site	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Number: 30080642.402.04	Method of Shipment/Carrier:			Lab sampling
PO # 30080642.402.04	Shipping/Tracking No:			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 58	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-975_080322	08/03/22	10:26		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-2275_080322		1206		X						6					N	G	X	X	X	X	X	X	X	
MW-745_080322		1351		X						6					N	G	X	X	X	X	X	X	X	
MW-74_080322		1446		X						6					N	G	X	X	X	X	X	X	X	
MW-2265_080322		1626		X						6					N	G	X	X	X	X	X	X	X	
MW-227_080422	08/04/22	1401		X						6					N	G	X	X	X	X	X	X	X	
DUP-12	08/03/22	—		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer th: Return to Client / Disposal By Lab / Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: Commercial + Resident Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

240-171152 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	8/4/22 1520	Novi Cold Storage	Arcadis	
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000		EETA	8/5/22 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/5/22 1030			

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171152
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171152

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171152-1
Sample date: 2022-08-03 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:8
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171152-1

		Sample Name:	TRIP BLANK_58				MW-97S_080322				MW-227S_080322				MW-74S_080322				MW-74_080322				MW-226S_080322				MW-227_080422				DUP-12			
		Lab Sample ID:	2401711521				2401711522				2401711523				2401711524				2401711525				2401711526				2401711527				2401711528			
		Sample Date:	8/3/2022				8/3/2022				8/3/2022				8/3/2022				8/3/2022				8/3/2022				8/4/2022				8/3/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																																		
	OSW-8260D																																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.79	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.9	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.0	1.0	ug/l	---
	OSW-8260DSIM																																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	4.0	ug/l	---	1.1	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---	1.0	2.0	ug/l	J

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

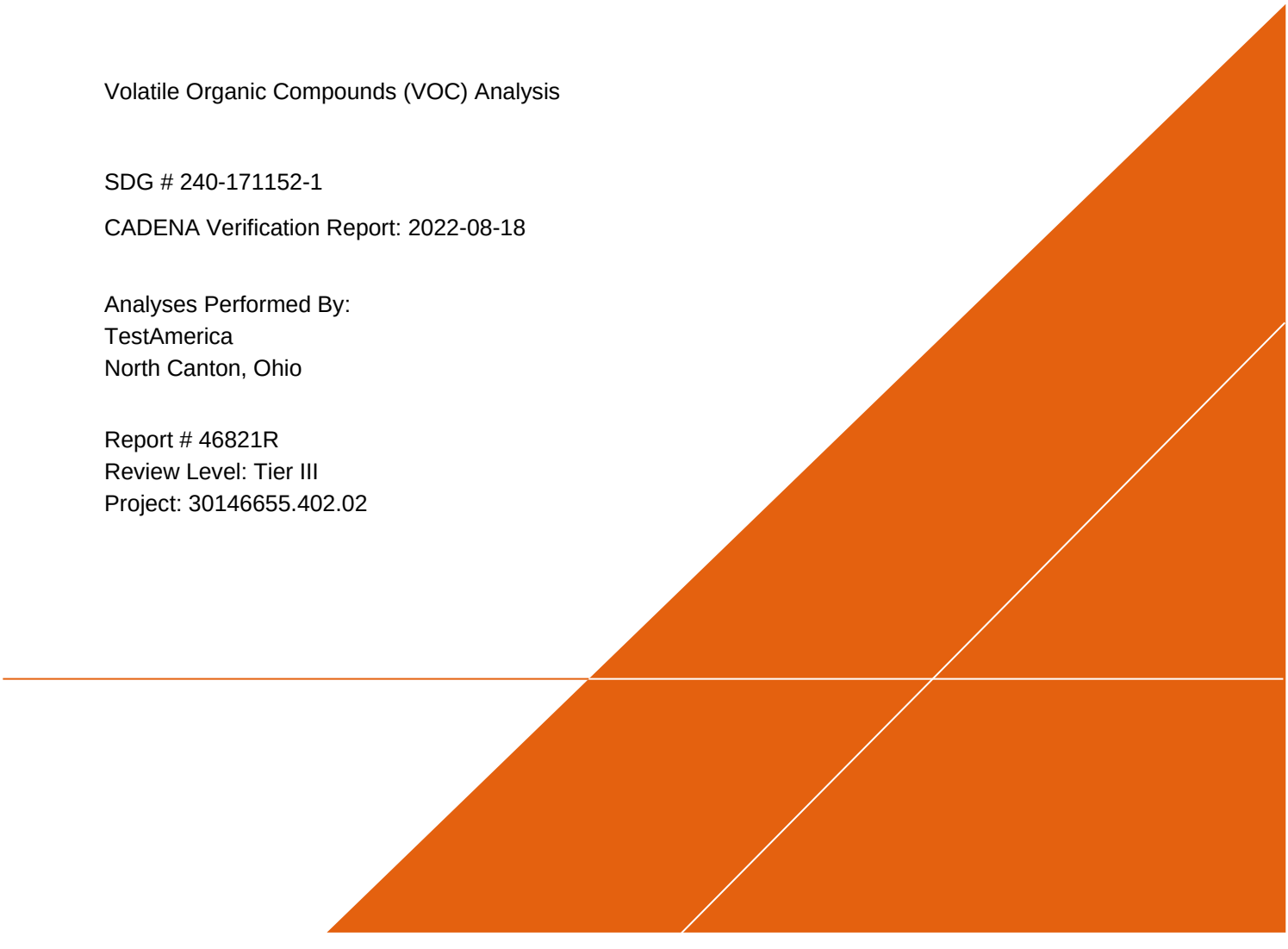
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171152-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46821R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171152-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_58	240-171152-1	Water	08/03/22		X	
MW-97S_080322	240-171152-2	Water	08/03/22		X	X
MW-227S_080322	240-171152-3	Water	08/03/22		X	X
MW-74S_080322	240-171152-4	Water	08/03/22		X	X
MW-74_080322	240-171152-5	Water	08/03/22		X	X
MW-226S_080322	240-171152-6	Water	08/03/22		X	X
MW-227_080422	240-171152-7	Water	08/04/22		X	X
DUP-12	240-171152-8	Water	08/03/22	MW-74_080322	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

DATA REVIEW

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-74_080322 / DUP-12	1,4-Dioxane	1.1 J	1.0 J	AC
	Vinyl chloride	2.9	3.0	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 19, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 20, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_ 58	8/3/22	—		X						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-97S_080322	08/03/22	10:26		X						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-227S_080322		1206		X						6					N	G	X	X	X	X	X	X	X					
MW-74S_080322		1351		X						6					N	G	X	X	X	X	X	X	X					
MW-74_080322		1446		X						6					N	G	X	X	X	X	X	X	X					
MW-226S_080322	—	1626		X						6					N	G	X	X	X	X	X	X	X					
MW-227_080422	08/04/22	1401		X						6					N	G	X	X	X	X	X	X	X					
DUP-12	08/03/22	—		X						6					N	G	X	X	X	X	X	X	X					

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer th: ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: Commercial + Resident Row
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	8/4/22 1520	Novi Cold Storage	Arcadis	
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000		EETA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/5/22 1030			

240-171152 Chain of Custody

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Client Sample ID: TRIP BLANK_58
Lab Sample ID: 240-171152-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 17:47*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 17:47*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 17:47*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/10/22 17:47*	*1*

Client Sample ID: MW-97S_080322
Lab Sample ID: 240-171152-2
Date Collected: 08/03/22 10:26
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 02:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/12/22 02:32*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 21:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 21:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 21:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 21:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*08/10/22 21:07*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 21:07*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/10/22 21:07*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/10/22 21:07*	*1*

Client Sample ID: MW-227S_080322
Lab Sample ID: 240-171152-3
Date Collected: 08/03/22 12:06
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 02:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/12/22 02:58*	*1*

Client Sample ID: MW-227S_080322
Lab Sample ID: 240-171152-3
Date Collected: 08/03/22 12:06
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 21:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 21:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 21:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 21:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/10/22 21:32*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/10/22 21:32*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 21:32*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/10/22 21:32*	*1*

Client Sample ID: MW-74S_080322
Lab Sample ID: 240-171152-4
Date Collected: 08/03/22 13:51
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			08/12/22 03:23	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/12/22 03:23*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 21:57	1
cis-1,2-Dichloroethene	**0.79**	**J**	1.0	0.46	ug/L			08/10/22 21:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 21:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 21:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 21:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/10/22 21:57*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 21:57*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/10/22 21:57*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 21:57*	*1*

Client Sample ID: MW-74_080322
Lab Sample ID: 240-171152-5
Date Collected: 08/03/22 14:46
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.1**	**J**	2.0	0.86	ug/L			08/12/22 03:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 03:48*	*1*

Client Sample ID: MW-74_080322
Lab Sample ID: 240-171152-5
Date Collected: 08/03/22 14:46
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 22:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 22:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 22:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:22	1
Vinyl chloride	**2.9**		1.0	0.45	ug/L			08/10/22 22:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/10/22 22:22*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 22:22*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/10/22 22:22*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/10/22 22:22*	*1*

Client Sample ID: MW-226S_080322
Lab Sample ID: 240-171152-6
Date Collected: 08/03/22 16:26
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/12/22 04:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 22:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 22:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 22:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 22:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 22:47*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 22:47*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/10/22 22:47*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/10/22 22:47*	*1*

Client Sample ID: MW-227_080422
Lab Sample ID: 240-171152-7
Date Collected: 08/04/22 14:01
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 04:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/12/22 04:39*	*1*

Client Sample ID: MW-227_080422
Lab Sample ID: 240-171152-7

Date Collected: 08/04/22 14:01
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 23:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 23:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 23:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 23:13*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 23:13*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 23:13*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/10/22 23:13*	*1*

Client Sample ID: DUP-12
Lab Sample ID: 240-171152-8

Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.0**	**J**	2.0	0.86	ug/L			08/12/22 05:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/12/22 05:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 23:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 23:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 23:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 23:38	1
Vinyl chloride	**3.0**		1.0	0.45	ug/L			08/10/22 23:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 23:38*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 23:38*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 23:38*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 23:38*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171945-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/6/2022 8:00:29 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Job ID: 240-171945-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171945-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171945-1	TRIP BLANK_170	Water	08/19/22 00:00	08/23/22 09:30
240-171945-2	MW-77_081922	Water	08/19/22 11:15	08/23/22 09:30
240-171945-3	MW-77S_081922	Water	08/19/22 10:10	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: TRIP BLANK_170 — Lab Sample ID: 240-171945-1

No Detections.

Client Sample ID: MW-77_081922 — Lab Sample ID: 240-171945-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.70	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-77S_081922 — Lab Sample ID: 240-171945-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: TRIP BLANK_170
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171945-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 16:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 16:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 16:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 16:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 16:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/25/22 16:19*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/25/22 16:19*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/25/22 16:19*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/25/22 16:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: MW-77_081922
Date Collected: 08/19/22 11:15
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171945-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/26/22 23:41*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 22:26	1
cis-1,2-Dichloroethene	**0.70**	**J**	1.0	0.46	ug/L			08/26/22 22:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 22:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/26/22 22:26*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 22:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/26/22 22:26*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/26/22 22:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: MW-77S_081922
Date Collected: 08/19/22 10:10
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171945-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 03:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/27/22 03:56*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 22:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 22:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 22:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 22:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/26/22 22:50*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 22:50*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/26/22 22:50*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/26/22 22:50*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171878-C-15 MS	Matrix Spike	87	95	97	93
240-171878-E-15 MSD	Matrix Spike Duplicate	87	93	95	93
240-171945-1	TRIP BLANK_170	99	93	101	104
240-171945-2	MW-77_081922	104	101	104	107
240-171945-3	MW-77S_081922	103	101	103	106
240-172000-D-15 MSD	Matrix Spike Duplicate	87	103	108	99
240-172000-E-15 MS	Matrix Spike	87	101	107	100
LCS 240-540194/5	Lab Control Sample	96	101	107	102
LCS 240-540356/5	Lab Control Sample	97	106	109	102
MB 240-540194/8	Method Blank	97	95	100	102
MB 240-540356/8	Method Blank	100	99	105	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171945-2	MW-77_081922	74
240-171945-3	MW-77S_081922	72
240-171965-G-5 MS	Matrix Spike	83
240-171965-M-5 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
MB 240-540396/4	Method Blank	71

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540194/8
Matrix: Water
Analysis Batch: 540194

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 15:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 15:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 15:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 15:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 15:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 15:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/25/22 15:55*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/25/22 15:55*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/25/22 15:55*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/25/22 15:55*	*1*

Lab Sample ID: LCS 240-540194/5
Matrix: Water
Analysis Batch: 540194

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	29.0		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	26.8		ug/L		107	70 - 122
Vinyl chloride	25.0	21.8		ug/L		87	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171878-C-15 MS
Matrix: Water
Analysis Batch: 540194

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	66 - 128
Tetrachloroethene	3.5		25.0	30.9		ug/L		109	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136
Trichloroethene	4.0		25.0	27.2		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	20.3		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171878-C-15 MS
Matrix: Water
Analysis Batch: 540194

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: 240-171878-E-15 MSD
Matrix: Water
Analysis Batch: 540194

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.9		ug/L		83	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	66 - 128	3	14
Tetrachloroethene	3.5		25.0	29.7		ug/L		105	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	4	15
Trichloroethene	4.0		25.0	26.1		ug/L		88	61 - 124	4	15
Vinyl chloride	1.0	U	25.0	19.6		ug/L		78	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		62 - 137
4-Bromofluorobenzene (Surr)	93		56 - 136
Toluene-d8 (Surr)	95		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: MB 240-540356/8
Matrix: Water
Analysis Batch: 540356

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 14:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 14:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 14:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 14:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 14:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 14:56	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		08/26/22 14:56	1
4-Bromofluorobenzene (Surr)	99		56 - 136		08/26/22 14:56	1
Toluene-d8 (Surr)	105		78 - 122		08/26/22 14:56	1
Dibromofluoromethane (Surr)	104		73 - 120		08/26/22 14:56	1

Lab Sample ID: LCS 240-540356/5
Matrix: Water
Analysis Batch: 540356

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	21.8		ug/L		87	63 - 134
cis-1,2-Dichloroethene	25.0	22.9		ug/L		91	77 - 123
Tetrachloroethene	25.0	28.4		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	23.3		ug/L		93	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-540356/5
Matrix: Water
Analysis Batch: 540356

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	21.0		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-172000-D-15 MSD
Matrix: Water
Analysis Batch: 540356

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		96	56 - 135	4	26
cis-1,2-Dichloroethene	1.1		25.0	23.9		ug/L		91	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	29.2		ug/L		117	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 136	4	15
Trichloroethene	1.0	U	25.0	25.0		ug/L		100	61 - 124	2	15
Vinyl chloride	1.0	U	25.0	21.5		ug/L		86	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-172000-E-15 MS
Matrix: Water
Analysis Batch: 540356

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135		
cis-1,2-Dichloroethene	1.1		25.0	25.1		ug/L		96	66 - 128		
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	24.3		ug/L		97	56 - 136		
Trichloroethene	1.0	U	25.0	25.4		ug/L		102	61 - 124		
Vinyl chloride	1.0	U	25.0	22.4		ug/L		89	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.61		ug/L		96	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-G-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-M-5 MSD
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

GC/MS VOA

Analysis Batch: 540194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171945-1	TRIP BLANK_170	Total/NA	Water	8260D	
MB 240-540194/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540194/5	Lab Control Sample	Total/NA	Water	8260D	
240-171878-C-15 MS	Matrix Spike	Total/NA	Water	8260D	
240-171878-E-15 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171945-2	MW-77_081922	Total/NA	Water	8260D	
240-171945-3	MW-77S_081922	Total/NA	Water	8260D	
MB 240-540356/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540356/5	Lab Control Sample	Total/NA	Water	8260D	
240-172000-D-15 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-172000-E-15 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171945-2	MW-77_081922	Total/NA	Water	8260D SIM	
240-171945-3	MW-77S_081922	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171965-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: TRIP BLANK_170

Lab Sample ID: 240-171945-1
Date Collected: 08/19/22 00:00
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540194	BAJ	EET CAN	08/25/22 16:19

Client Sample ID: MW-77_081922

Lab Sample ID: 240-171945-2
Date Collected: 08/19/22 11:15
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540356	SAM	EET CAN	08/26/22 22:26
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/26/22 23:41

Client Sample ID: MW-77S_081922

Lab Sample ID: 240-171945-3
Date Collected: 08/19/22 10:10
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540356	SAM	EET CAN	08/26/22 22:50
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 03:56

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_170	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-77-081922	8/19/22	1115		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-775-081922	1	1010		6						6					N	G	X	X	X	X	X	X	X	1

240-171945 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~1416~~ 1516 Boston Post St. ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/19/22 1350	NOVI COND STORAGE	ARCADIS	8/19/22 1350
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Received in Laboratory by:	TEETNC	8-23-22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client Arcadis Site Name_____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? J 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171945-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-06
Initial Data Verification completed by CADENA: 2022-09-06
Number of Samples:3
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171945-1

		Sample Name:	TRIP BLANK_170				MW-77_081922				MW-77S_081922			
		Lab Sample ID:	2401719451				2401719452				2401719453			
		Sample Date:	8/19/2022				8/19/2022				8/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.70	1.0	ug/l	J	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

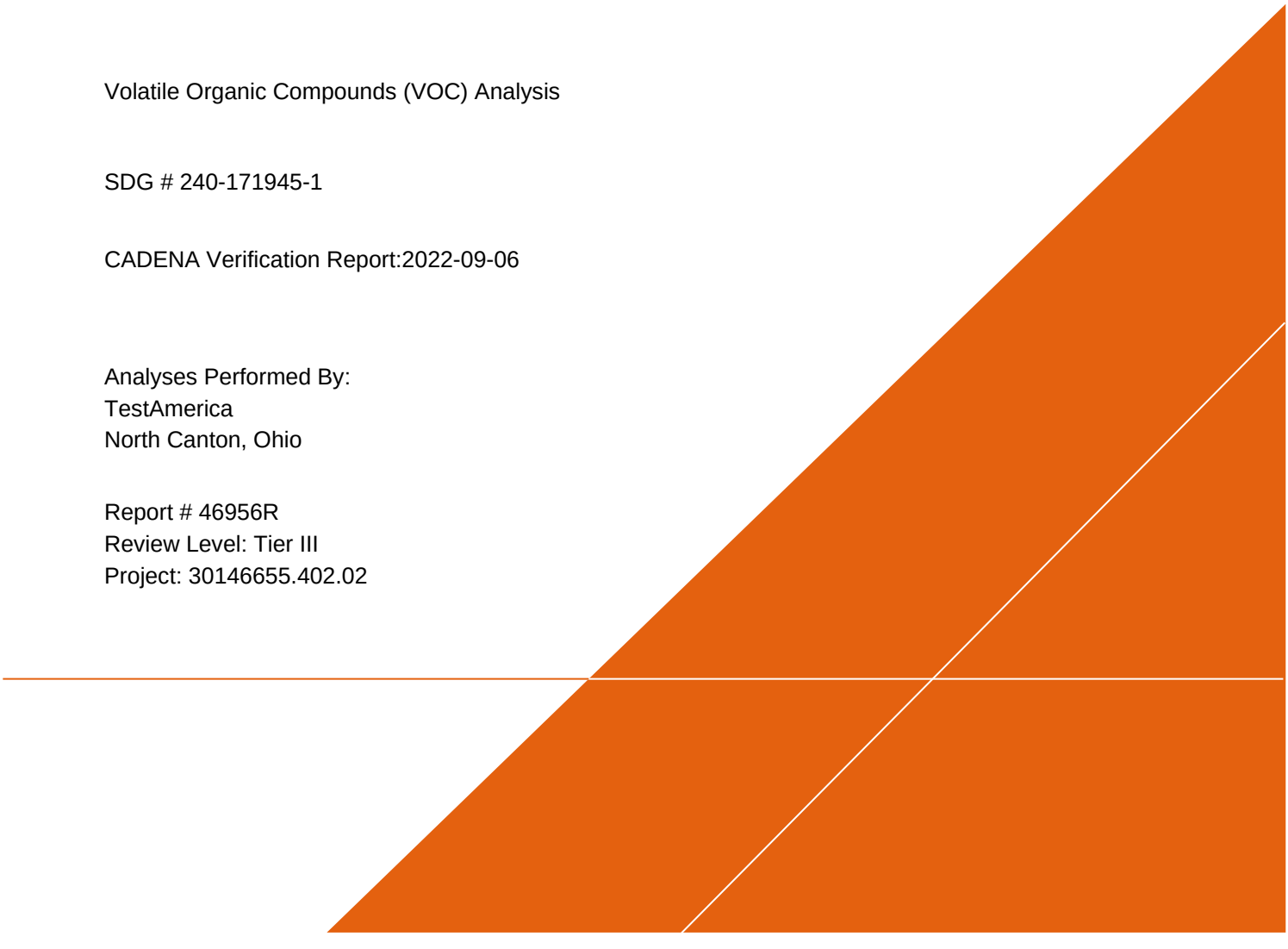
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171945-1

CADENA Verification Report:2022-09-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46956R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171945-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_170	240-171945-1	Water	08/19/22		X	
MW-77_081922	240-171945-2	Water	08/19/22		X	X
MW-77S_081922	240-171945-3	Water	08/19/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_170	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-77-081922	8/19/22	1115		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-775-081922	1	1010		6						6					N	G	X	X	X	X	X	X	X	1

240-171945 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~1416~~ 1418 Boston Post St. ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/19/22 1350	NOVI COND STORAGE	ARCADIS	8/19/22 1350
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 1120
	Eurofins	8/22/22	Received in Laboratory by:	TEI INC	8/23/22 9:30

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: TRIP BLANK_170
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171945-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/25/22 16:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/25/22 16:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 16:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/25/22 16:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/25/22 16:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/25/22 16:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/25/22 16:19*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/25/22 16:19*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/25/22 16:19*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/25/22 16:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: MW-77_081922
Date Collected: 08/19/22 11:15
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171945-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 23:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/26/22 23:41*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 22:26	1
cis-1,2-Dichloroethene	**0.70**	**J**	1.0	0.46	ug/L			08/26/22 22:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 22:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/26/22 22:26*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 22:26*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/26/22 22:26*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/26/22 22:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171945-1

Client Sample ID: MW-77S_081922
Date Collected: 08/19/22 10:10
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171945-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 03:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/27/22 03:56*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 22:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 22:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 22:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 22:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 22:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/26/22 22:50*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/26/22 22:50*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/26/22 22:50*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/26/22 22:50*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171285-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/22/2022 4:16:02 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Job ID: 240-171285-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171285-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171285-1	TRIP BLANK_59	Water	08/05/22 00:00	08/10/22 11:56
240-171285-2	MW-78_080522	Water	08/05/22 10:40	08/10/22 11:56
240-171285-3	MW-98S_080522	Water	08/05/22 12:05	08/10/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Client Sample ID: TRIP BLANK_59 — Lab Sample ID: 240-171285-1

No Detections.

Client Sample ID: MW-78_080522 — Lab Sample ID: 240-171285-2

No Detections.

Client Sample ID: MW-98S_080522 — Lab Sample ID: 240-171285-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Client Sample ID: TRIP BLANK_59

Date Collected: 08/05/22 00:00
Date Received: 08/10/22 11:56

Lab Sample ID: 240-171285-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 20:36*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/11/22 20:36*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/11/22 20:36*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/11/22 20:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Client Sample ID: MW-78_080522

Date Collected: 08/05/22 10:40
Date Received: 08/10/22 11:56

Lab Sample ID: 240-171285-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/14/22 22:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/11/22 20:58*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/11/22 20:58*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 20:58*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/11/22 20:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Client Sample ID: MW-98S_080522
Date Collected: 08/05/22 12:05
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171285-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 23:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/14/22 23:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/11/22 20:35*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/11/22 20:35*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/11/22 20:35*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/11/22 20:35*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-17 MS	Matrix Spike	93	90	102	103
240-171141-B-17 MSD	Matrix Spike Duplicate	97	91	101	106
240-171285-1	TRIP BLANK_59	95	87	99	105
240-171285-2	MW-78_080522	92	87	95	97
240-171285-2 MS	MW-78-MS_080522	90	95	101	96
240-171285-2 MSD	MW-78-MSD_080522	92	98	100	97
240-171285-3	MW-98S_080522	90	86	93	94
LCS 240-538489/8	Lab Control Sample	90	86	96	99
LCS 240-538491/5	Lab Control Sample	89	92	100	95
MB 240-538489/9	Method Blank	90	83	94	96
MB 240-538491/8	Method Blank	95	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171285-2	MW-78_080522	87
240-171285-2 MS	MW-78-MS_080522	89
240-171285-2 MSD	MW-78-MSD_080522	89
240-171285-3	MW-98S_080522	87
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538489/9
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/11/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/11/22 13:39*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 13:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/11/22 13:39*	*1*

Lab Sample ID: LCS 240-538489/8
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.4		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	77 - 123
Tetrachloroethene	20.0	17.6		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	250	226		ug/L		90	56 - 135
cis-1,2-Dichloroethene	13		250	249		ug/L		94	66 - 128
Tetrachloroethene	690	F1	250	867	E	ug/L		70	62 - 131
trans-1,2-Dichloroethene	13	U	250	214		ug/L		85	56 - 136
Trichloroethene	14		250	245		ug/L		92	61 - 124
Vinyl chloride	13	U	250	212		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	103		73 - 120

Lab Sample ID: 240-171141-B-17 MSD
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	229		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	13		250	265		ug/L		101	66 - 128	6	14
Tetrachloroethene	690	F1	250	844	E F1	ug/L		61	62 - 131	3	20
trans-1,2-Dichloroethene	13	U	250	223		ug/L		89	56 - 136	4	15
Trichloroethene	14		250	255		ug/L		96	61 - 124	4	15
Vinyl chloride	13	U	250	216		ug/L		86	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		62 - 137
4-Bromofluorobenzene (Surr)	91		56 - 136
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	106		73 - 120

Lab Sample ID: MB 240-538491/8
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		08/11/22 13:03	1
4-Bromofluorobenzene (Surr)	90		56 - 136		08/11/22 13:03	1
Toluene-d8 (Surr)	98		78 - 122		08/11/22 13:03	1
Dibromofluoromethane (Surr)	100		73 - 120		08/11/22 13:03	1

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.2		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	28.4		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	22.8		ug/L		91	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	22.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171285-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: MW-78-MS_080522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	66 - 128		
Tetrachloroethene	1.0	U	25.0	27.8		ug/L		111	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 136		
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124		
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171285-2 MSD
Matrix: Water
Analysis Batch: 538491

Client Sample ID: MW-78-MSD_080522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136	1	15
Trichloroethene	1.0	U	25.0	23.5		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.7		ug/L		79	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.43		ug/L		94	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: MW-78-MS_080522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: MW-78-MSD_080522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

GC/MS VOA

Analysis Batch: 538489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171285-1	TRIP BLANK_59	Total/NA	Water	8260D	
MB 240-538489/9	Method Blank	Total/NA	Water	8260D	
LCS 240-538489/8	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-17 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171285-2	MW-78_080522	Total/NA	Water	8260D	
240-171285-3	MW-98S_080522	Total/NA	Water	8260D	
MB 240-538491/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538491/5	Lab Control Sample	Total/NA	Water	8260D	
240-171285-2 MS	MW-78-MS_080522	Total/NA	Water	8260D	
240-171285-2 MSD	MW-78-MSD_080522	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171285-2	MW-78_080522	Total/NA	Water	8260D SIM	
240-171285-3	MW-98S_080522	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-2 MS	MW-78-MS_080522	Total/NA	Water	8260D SIM	
240-171285-2 MSD	MW-78-MSD_080522	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Client Sample ID: TRIP BLANK_59

Lab Sample ID: 240-171285-1

Date Collected: 08/05/22 00:00

Matrix: Water

Date Received: 08/10/22 11:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 20:36

Client Sample ID: MW-78_080522

Lab Sample ID: 240-171285-2

Date Collected: 08/05/22 10:40

Matrix: Water

Date Received: 08/10/22 11:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 20:58
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/14/22 22:33

Client Sample ID: MW-98S_080522

Lab Sample ID: 240-171285-3

Date Collected: 08/05/22 12:05

Matrix: Water

Date Received: 08/10/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 20:35
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/14/22 23:49

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171285-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact

Company Name: Arcadis

Address: 28550 Cabot Drive, Suite 500

City/State/Zip: Novi, MI, 48377

Phone: 248-994-2240

Project Name: Ford LTP Off-Site

Project Number: 30080642.402.04

PO # 30080642.402.04

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Project Manager: Kris Hinskey

Telephone: 269-832-7478

Email: Kristoffer.Hinskey@arcadis.com

Sampler Name: Sommer Guy

Method of Shipment/Carrier:

Shipping/Tracking No:

Site Contact: Christina Weaver

Telephone: 248-994-2329

Lab Contact: Mike DelMonico

Telephone: 330-966-9783

COC No:

1 of 1 COCs

For lab use only

Walk-in client

Lab sampling

Job/SDG No:

Analysis Turnaround Time

TAT if different from below

10 day

☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_59	8/5/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
~~MW-78_080522~~ 56 MW-78_080522	8/5/22	1040		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-78-MS_080522	8/5/22	1040		X						6					N	G	X	X	X	X	X	X	X	un MS/MSD
MW-78-MSD_080522	8/5/22	1040		X						6					N	G	X	X	X	X	X	X	X	un MS/MSD
MW-985_080522	8/5/22	1205		X						6					N	G	X	X	X	X	X	X	X	

240-171285 Chain of Custody

Possible Hazard Identification

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Mon.

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon Row

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis 130	8/5/22	NOVI Cold Storage	Arcadis	8/5/22 1300
[signature]	Arcadis	8/9/22 1410	[signature]	EEtA	8/9/22 1411
[signature]	EEtA	8/8/22 1446	Received in Laboratory by: [signature]	EEtA	8-10-22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171285-1
Sample date: 2022-08-05
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171285-1

		Sample Name:	TRIP BLANK_59				MW-78_080522				MW-98S_080522			
		Lab Sample ID:	2401712851				2401712852				2401712853			
		Sample Date:	8/5/2022				8/5/2022				8/5/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

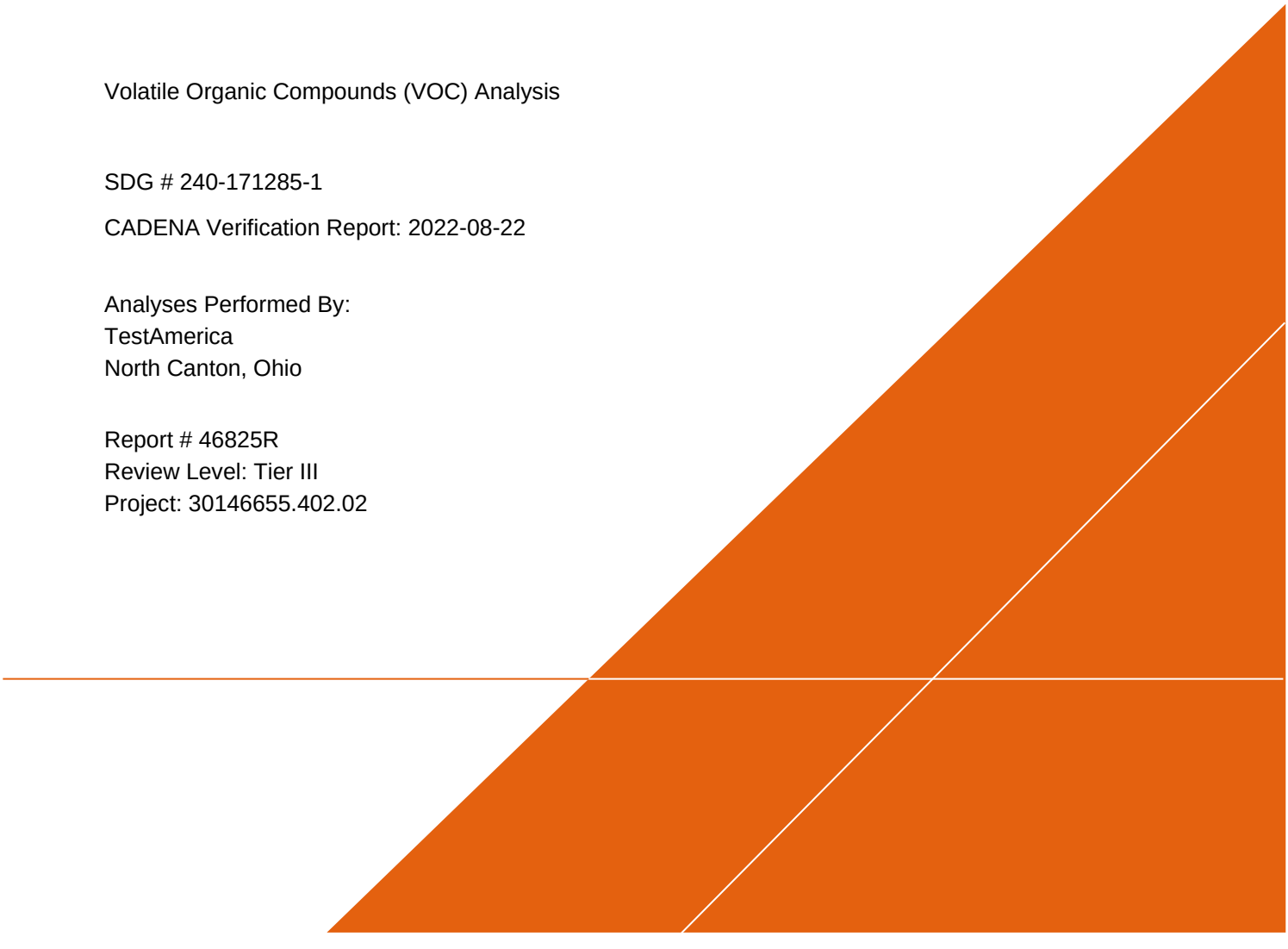
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171285-1

CADENA Verification Report: 2022-08-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46825R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171285-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_59	240-171285-1	Water	08/05/22		X	
MW-78_080522	240-171285-2	Water	08/05/22		X	X
MW-98S_080522	240-171285-3	Water	08/05/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 20, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 20, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_59	8/5/22	—		X						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-78_080522	8/5/22	1040		X						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-78-MS_080522	8/5/22	1040		X						6					N	G	X	X	X	X	X	X	X					un MS/MSD
MW-78-MSD_080522	8/5/22	1040		X						6					N	G	X	X	X	X	X	X	X					un MS/MSD
MW-98S_080522	8/5/22	1205		X						6					N	G	X	X	X	X	X	X	X					

240-171285 Chain of Custody

Possible Hazard Identification
Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client Disposal By Lab Archive For ___ Mon

Special Instructions/QC Requirements & Comments:
Sample Address: Beacon Row
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis 130	8/5/22	Novi Cold Storage	Arcadis	8/5/22 1300
[signature]	Arcadis	8/9/22 1410	[signature]	EEA	8/9/22 1411
[signature]	EEA	8/9/22 1446	[signature]	ESC	8-10-22 9:30

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08/22/2022

Client Sample ID: TRIP BLANK_59
Lab Sample ID: 240-171285-1
Date Collected: 08/05/22 00:00
Matrix: Water
Date Received: 08/10/22 11:56

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 20:36*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/11/22 20:36*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/11/22 20:36*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/11/22 20:36*	*1*

Client Sample ID: MW-78_080522
Lab Sample ID: 240-171285-2
Date Collected: 08/05/22 10:40
Matrix: Water
Date Received: 08/10/22 11:56

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/14/22 22:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/11/22 20:58*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/11/22 20:58*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 20:58*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/11/22 20:58*	*1*

Client Sample ID: MW-98S_080522
Lab Sample ID: 240-171285-3
Date Collected: 08/05/22 12:05
Matrix: Water
Date Received: 08/10/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 23:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/14/22 23:49*	*1*

Client Sample ID: MW-98S_080522
Lab Sample ID: 240-171285-3

Date Collected: 08/05/22 12:05
Matrix: Water

Date Received: 08/10/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 20:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 20:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 20:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 20:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 20:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/11/22 20:35*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/11/22 20:35*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/11/22 20:35*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/11/22 20:35*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170958-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/18/2022 8:11:55 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Job ID: 240-170958-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170958-1

Comments
No additional comments.

Receipt
The samples were received on 8/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4° C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170958-1	TRIP BLANK_40	Water	08/02/22 00:00	08/04/22 09:40
240-170958-2	MW-78S_080222	Water	08/02/22 13:50	08/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Client Sample ID: TRIP BLANK_40 — Lab Sample ID: 240-170958-1

No Detections.

Client Sample ID: MW-78S_080222 — Lab Sample ID: 240-170958-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Client Sample ID: TRIP BLANK_40

Date Collected: 08/02/22 00:00
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170958-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 18:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 18:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 18:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 18:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 18:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 18:59*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/05/22 18:59*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/05/22 18:59*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 18:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Client Sample ID: MW-78S_080222
Date Collected: 08/02/22 13:50
Date Received: 08/04/22 09:40

Lab Sample ID: 240-170958-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/09/22 15:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 19:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 19:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 19:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 19:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 19:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 19:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 19:50*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/05/22 19:50*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/05/22 19:50*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 19:50*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170958-1	TRIP BLANK_40	99	89	95	100
240-170958-2	MW-78S_080222	97	87	97	101
240-170971-B-1 MS	Matrix Spike	95	100	99	102
240-170971-B-1 MSD	Matrix Spike Duplicate	94	99	100	100
LCS 240-537713/4	Lab Control Sample	93	96	99	100
MB 240-537713/7	Method Blank	97	88	96	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170958-2	MW-78S_080222	88
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537713/7
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 13:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 13:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 13:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 13:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 13:09*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/05/22 13:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/05/22 13:09*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 13:09*	*1*

Lab Sample ID: LCS 240-537713/4
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.4		ug/L		113	63 - 134
cis-1,2-Dichloroethene	25.0	25.6		ug/L		102	77 - 123
Tetrachloroethene	25.0	27.3		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	25.0		ug/L		100	70 - 122
Vinyl chloride	12.5	9.78		ug/L		78	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-170971-B-1 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	3.3	U	83.3	95.5		ug/L		115	56 - 135
cis-1,2-Dichloroethene	3.3	U	83.3	86.2		ug/L		103	66 - 128
Tetrachloroethene	12		83.3	96.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	3.3	U	83.3	86.5		ug/L		104	56 - 136
Trichloroethene	90		83.3	162		ug/L		86	61 - 124
Vinyl chloride	3.3	U	41.7	35.5		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-170971-B-1 MS
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-170971-B-1 MSD
Matrix: Water
Analysis Batch: 537713

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	3.3	U	83.3	95.6		ug/L		115	56 - 135	0	26
cis-1,2-Dichloroethene	3.3	U	83.3	85.9		ug/L		103	66 - 128	0	14
Tetrachloroethene	12		83.3	98.8		ug/L		104	62 - 131	3	20
trans-1,2-Dichloroethene	3.3	U	83.3	86.2		ug/L		103	56 - 136	0	15
Trichloroethene	90		83.3	165		ug/L		91	61 - 124	2	15
Vinyl chloride	3.3	U	41.7	31.9		ug/L		77	43 - 157	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

GC/MS VOA

Analysis Batch: 537713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170958-1	TRIP BLANK_40	Total/NA	Water	8260D	
240-170958-2	MW-78S_080222	Total/NA	Water	8260D	
MB 240-537713/7	Method Blank	Total/NA	Water	8260D	
LCS 240-537713/4	Lab Control Sample	Total/NA	Water	8260D	
240-170971-B-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-170971-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170958-2	MW-78S_080222	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Client Sample ID: TRIP BLANK_40

Lab Sample ID: 240-170958-1

Date Collected: 08/02/22 00:00

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537713	SAM	EET CAN	08/05/22 18:59

Client Sample ID: MW-78S_080222

Lab Sample ID: 240-170958-2

Date Collected: 08/02/22 13:50

Matrix: Water

Date Received: 08/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	537713	SAM	EET CAN	08/05/22 19:50
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 15:06

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170958-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

3.4 / 3.4

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

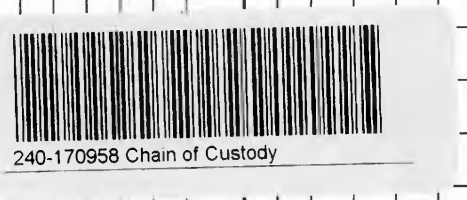
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_40	8/2/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-78S_080222	8/2/22	1350		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 11710 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/2/22 1700	Novi Cold Storage	Arcadis	8/2/22 1700
[signature]	Arcadis	8/3/22 1145	[signature]	EEA	8/3/22 1140
[signature]	EEA	8/5/22 1150	Received in Laboratory by: [signature]	Company: EEINC	Date/Time: 8-4-22 940

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8/18/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 170958
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Danny Vega

Cooler Received on 8-4-22 Opened on 8-4-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	~~Yes~~	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	~~No~~
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170958-1
Sample date: 2022-08-02
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170958-1

		Sample Name:	TRIP BLANK_40				MW-78S_080222			
		Lab Sample ID:	2401709581				2401709582			
		Sample Date:	8/2/2022				8/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

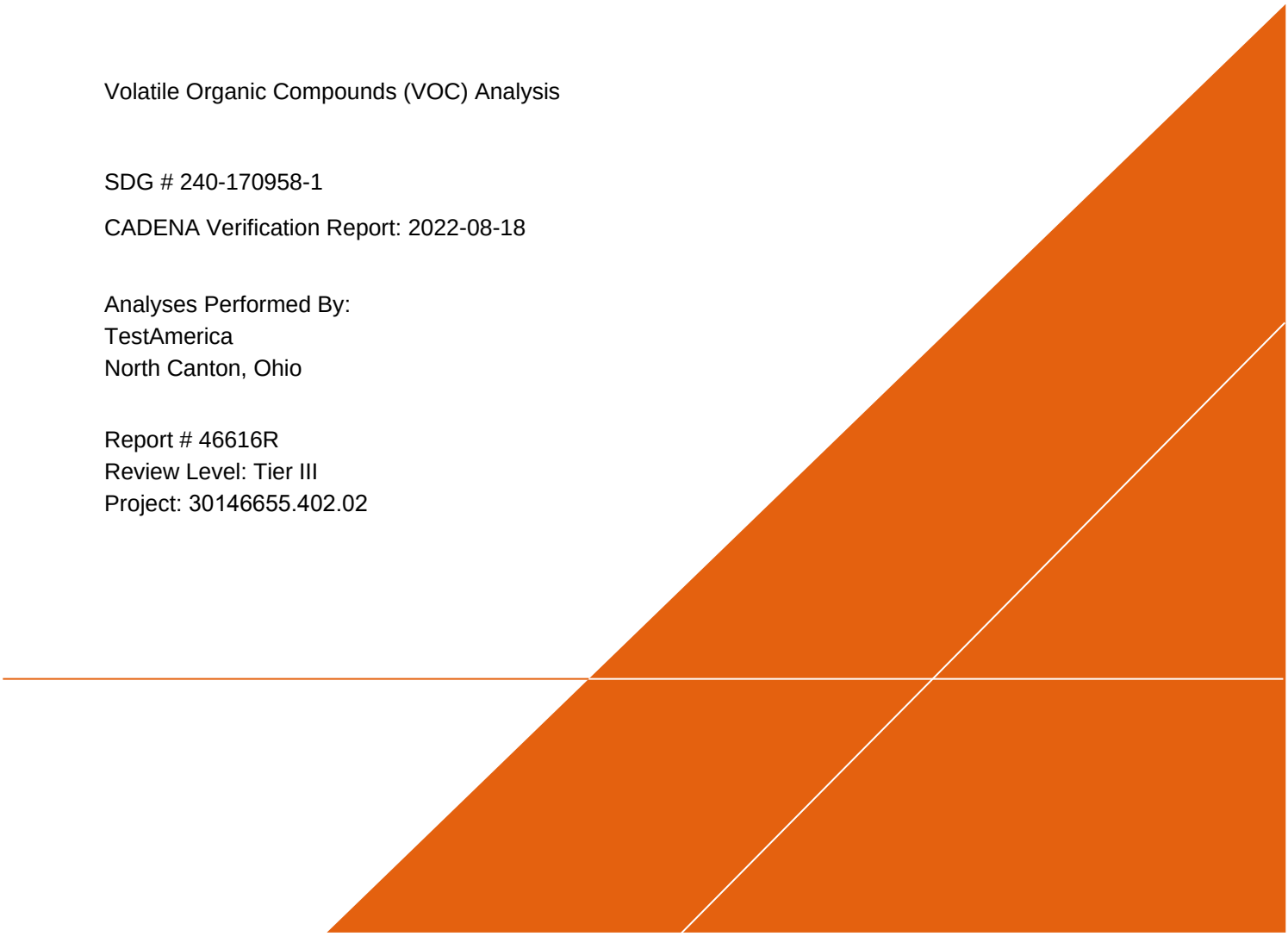
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170958-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46616R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170958-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_40	240-170958-1	Water	08/02/22		X	
MW-78S_080222	240-170958-2	Water	08/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 13, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_40	8/2/22	—		X						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-78S_080222	8/2/22	1350		X						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM

240-170958 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11710 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 8/2/22 1700	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 8/2/22 1700
Relinquished by:	Company: Arcadis	Date/Time: 8/3/22 1145	Received by:	Company: EETA	Date/Time: 8/3/22 1146
Relinquished by:	Company: EETA	Date/Time: 8/5/22 1150	Received in Laboratory by:	Company: EETNC	Date/Time: 8-4-22 940

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08/18/2022

Client Sample ID: TRIP BLANK_40
Lab Sample ID: 240-170958-1
Date Collected: 08/02/22 00:00
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 18:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 18:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 18:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 18:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 18:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/05/22 18:59*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/05/22 18:59*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/05/22 18:59*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/05/22 18:59*	*1*

Client Sample ID: MW-78S_080222
Lab Sample ID: 240-170958-2
Date Collected: 08/02/22 13:50
Matrix: Water
Date Received: 08/04/22 09:40

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/09/22 15:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/05/22 19:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/05/22 19:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 19:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/05/22 19:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/05/22 19:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/05/22 19:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/05/22 19:50*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/05/22 19:50*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/05/22 19:50*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/05/22 19:50*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171151-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:29:26 PM

Michael DelMonico, Project Manager I
(330)497-9396
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Job ID: 240-171151-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171151-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171151-1	TRIP BLANK_48	Water	08/04/22 00:00	08/06/22 10:00
240-171151-2	MW-79D_080422	Water	08/04/22 10:10	08/06/22 10:00
240-171151-3	MW-79SR_080422	Water	08/04/22 11:05	08/06/22 10:00
240-171151-4	DUP-06	Water	08/04/22 00:00	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Client Sample ID: TRIP BLANK_48 — Lab Sample ID: 240-171151-1

No Detections.

Client Sample ID: MW-79D_080422 — Lab Sample ID: 240-171151-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-79SR_080422 — Lab Sample ID: 240-171151-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.64	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-06 — Lab Sample ID: 240-171151-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.8		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Client Sample ID: TRIP BLANK_48

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171151-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/10/22 17:22*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 17:22*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 17:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Client Sample ID: MW-79D_080422
Date Collected: 08/04/22 10:10
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171151-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 01:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/12/22 01:16*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:52	1
Vinyl chloride	**1.9**		1.0	0.45	ug/L			08/10/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/10/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 19:52*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 19:52*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Client Sample ID: MW-79SR_080422
Date Collected: 08/04/22 11:05
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171151-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 01:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 01:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:17	1
Vinyl chloride	**0.64**	**J**	1.0	0.45	ug/L			08/10/22 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 20:17*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 20:17*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/10/22 20:17*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*08/10/22 20:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Client Sample ID: DUP-06
Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171151-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/12/22 02:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:42	1
Vinyl chloride	**1.8**		1.0	0.45	ug/L			08/10/22 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/10/22 20:42*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 20:42*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 20:42*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/10/22 20:42*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-28 MS	Matrix Spike	83	99	96	87
240-171141-B-28 MSD	Matrix Spike Duplicate	81	95	92	87
240-171151-1	TRIP BLANK_48	89	87	91	89
240-171151-2	MW-79D_080422	90	89	92	89
240-171151-3	MW-79SR_080422	91	89	93	93
240-171151-4	DUP-06	92	90	91	90
LCS 240-538361/4	Lab Control Sample	85	95	95	88
MB 240-538361/6	Method Blank	88	88	91	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171151-2	MW-79D_080422	88
240-171151-3	MW-79SR_080422	89
240-171151-4	DUP-06	88
240-171154-D-2 MS	Matrix Spike	91
240-171154-D-2 MSD	Matrix Spike Duplicate	94
LCS 240-538564/3	Lab Control Sample	93
MB 240-538564/4	Method Blank	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538361/6
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 16:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 16:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 16:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 16:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 16:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/10/22 16:07*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/10/22 16:07*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 16:07*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 16:07*	*1*

Lab Sample ID: LCS 240-538361/4
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.5		ug/L		90	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.5		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.5		ug/L		90	75 - 124
Trichloroethene	25.0	22.4		ug/L		89	70 - 122
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171141-B-28 MS
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	3.3	U	83.3	73.8		ug/L		89	56 - 135
cis-1,2-Dichloroethene	78		83.3	141		ug/L		76	66 - 128
Tetrachloroethene	2.1	J	83.3	71.1		ug/L		83	62 - 131
trans-1,2-Dichloroethene	3.3	U	83.3	72.8		ug/L		87	56 - 136
Trichloroethene	6.3		83.3	72.3		ug/L		79	61 - 124
Vinyl chloride	3.3	U	41.7	36.5		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-28 MS
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	87		73 - 120

Lab Sample ID: 240-171141-B-28 MSD
Matrix: Water
Analysis Batch: 538361

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	3.3	U	83.3	73.6		ug/L		88	56 - 135	0	26
cis-1,2-Dichloroethene	78		83.3	143		ug/L		78	66 - 128	1	14
Tetrachloroethene	2.1	J	83.3	68.9		ug/L		80	62 - 131	3	20
trans-1,2-Dichloroethene	3.3	U	83.3	72.2		ug/L		87	56 - 136	1	15
Trichloroethene	6.3		83.3	72.4		ug/L		79	61 - 124	0	15
Vinyl chloride	3.3	U	41.7	36.6		ug/L		88	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		62 - 137
4-Bromofluorobenzene (Surr)	95		56 - 136
Toluene-d8 (Surr)	92		78 - 122
Dibromofluoromethane (Surr)	87		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538564/4
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/11/22 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		66 - 120		08/11/22 20:13	1

Lab Sample ID: LCS 240-538564/3
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		66 - 120

Lab Sample ID: 240-171154-D-2 MS
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	61		10.0	75.2	4	ug/L		139	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171154-D-2 MSD
Matrix: Water
Analysis Batch: 538564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	61		10.0	74.6	4	ug/L		133	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

GC/MS VOA

Analysis Batch: 538361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171151-1	TRIP BLANK_48	Total/NA	Water	8260D	
240-171151-2	MW-79D_080422	Total/NA	Water	8260D	
240-171151-3	MW-79SR_080422	Total/NA	Water	8260D	
240-171151-4	DUP-06	Total/NA	Water	8260D	
MB 240-538361/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538361/4	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-28 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-28 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171151-2	MW-79D_080422	Total/NA	Water	8260D SIM	
240-171151-3	MW-79SR_080422	Total/NA	Water	8260D SIM	
240-171151-4	DUP-06	Total/NA	Water	8260D SIM	
MB 240-538564/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538564/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171154-D-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171154-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Client Sample ID: TRIP BLANK_48

Lab Sample ID: 240-171151-1
Matrix: Water
Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 17:22

Client Sample ID: MW-79D_080422

Lab Sample ID: 240-171151-2
Matrix: Water
Date Collected: 08/04/22 10:10
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 19:52
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 01:16

Client Sample ID: MW-79SR_080422

Lab Sample ID: 240-171151-3
Matrix: Water
Date Collected: 08/04/22 11:05
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 20:17
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 01:42

Client Sample ID: DUP-06

Lab Sample ID: 240-171151-4
Matrix: Water
Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538361	SAM	EET CAN	08/10/22 20:42
Total/NA	Analysis	8260D SIM		1	538564	CS	EET CAN	08/12/22 02:07

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171151-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_48	8/4/22	—		6						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-79D_080422	8/4/22	1010								6							X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-79SR_080422	8/4/22	1105								6							X	X	X	X	X	X	X	
Dup-06	8/4/22	—		—						6						—	X	X	X	X	X	X	X	—

240-171151 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Boston Post Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/4/22 1300	Novi Cold Storage	Arcadis	8/4/22 1300
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/5/22 1000	[signature]	EEA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EEA	8/5/22 1030			

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 171151
Barberton Facility

Client Arcadis Site Name Ford LTP
Cooler Received on 8-6-22 Opened on 8-6-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Cooler unpacked by:

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420166	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171151

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171151-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171151-1

		Sample Name:	TRIP BLANK_48				MW-79D_080422				MW-79SR_080422				DUP-06			
		Lab Sample ID:	2401711511				2401711512				2401711513				2401711514			
		Sample Date:	8/4/2022				8/4/2022				8/4/2022				8/4/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
OSW-8260D																		
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	1.9	1.0	ug/l	---	0.64	1.0	ug/l	J	1.8	1.0	ug/l	---
OSW-8260DSIM																		
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

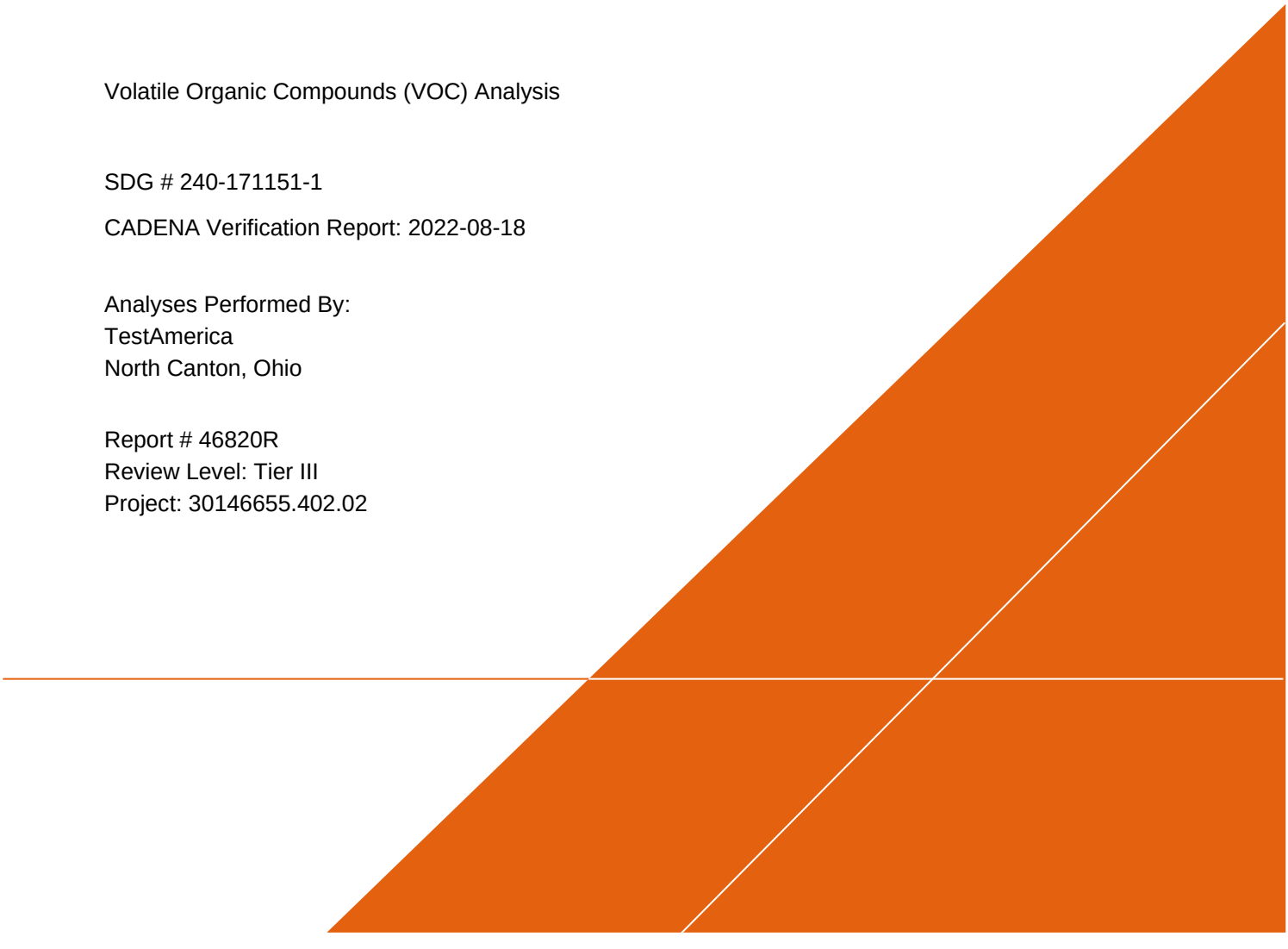
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171151-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46820R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171151-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_48	240-171151-1	Water	08/04/22		X	
MW-79D_080422	240-171151-2	Water	08/04/22		X	X
MW-79SR_080422	240-171151-3	Water	08/04/22		X	X
DUP-06	240-171151-4	Water	08/04/22	MW-79D_080422	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-79D_080422 / DUP-06	Vinyl chloride	1.9	1.8	AC

Notes:

AC – Acceptable

The calculated difference between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 19, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 20, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christian Garrido	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_48	8/4/22	—		4						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-79D_080422	8/4/22	1010								6							X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-79SR_080422	8/4/22	1105								6							X	X	X	X	X	X	X	
DUP-06	8/4/22	—		—						6						—	X	X	X	X	X	X	X	—

240-171151 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Boston Post Rd W

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/4/22 1300	Novi Cold Storage	Arcadis	8/4/22 1300
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/5/22 1000		EE-LA	8/5/22 1001
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EE-LA	8/5/22 1030			

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08/17/2022

Client Sample ID: TRIP BLANK_48
Lab Sample ID: 240-171151-1
Date Collected: 08/04/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 17:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/10/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/10/22 17:22*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 17:22*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 17:22*	*1*

Client Sample ID: MW-79D_080422
Lab Sample ID: 240-171151-2
Date Collected: 08/04/22 10:10
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 01:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/12/22 01:16*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:52	1
Vinyl chloride	**1.9**		1.0	0.45	ug/L			08/10/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/10/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 19:52*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/10/22 19:52*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/10/22 19:52*	*1*

Client Sample ID: MW-79SR_080422
Lab Sample ID: 240-171151-3
Date Collected: 08/04/22 11:05
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 01:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 01:42*	*1*

Client Sample ID: MW-79SR_080422
Lab Sample ID: 240-171151-3

Date Collected: 08/04/22 11:05
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:17	1
Vinyl chloride	**0.64**	**J**	1.0	0.45	ug/L			08/10/22 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/10/22 20:17*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/10/22 20:17*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/10/22 20:17*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*08/10/22 20:17*	*1*

Client Sample ID: DUP-06
Lab Sample ID: 240-171151-4

Date Collected: 08/04/22 00:00
Matrix: Water
Date Received: 08/06/22 10:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/12/22 02:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 20:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 20:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 20:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 20:42	1
Vinyl chloride	**1.8**		1.0	0.45	ug/L			08/10/22 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/10/22 20:42*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/10/22 20:42*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/10/22 20:42*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/10/22 20:42*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171861-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/31/2022 1:57:39 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Job ID: 240-171861-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171861-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171861-1	TRIP BLANK_06	Water	08/18/22 00:00	08/20/22 09:35
240-171861-2	MW-80SR_081822	Water	08/18/22 09:25	08/20/22 09:35
240-171861-3	DUP-07	Water	08/18/22 00:00	08/20/22 09:35

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Client Sample ID: TRIP BLANK_06 — Lab Sample ID: 240-171861-1

No Detections.

Client Sample ID: MW-80SR_081822 — Lab Sample ID: 240-171861-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	4.3		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-07 — Lab Sample ID: 240-171861-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	4.4		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Client Sample ID: TRIP BLANK_06

Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171861-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/23/22 19:30*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/23/22 19:30*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 19:30*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/23/22 19:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Client Sample ID: MW-80SR_081822

Date Collected: 08/18/22 09:25
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171861-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 03:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 03:18*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:53	1
Vinyl chloride	**4.3**		1.0	0.45	ug/L			08/23/22 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/23/22 19:53*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/23/22 19:53*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 19:53*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/23/22 19:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Client Sample ID: DUP-07
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171861-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 03:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 03:44*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 20:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 20:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:16	1
Vinyl chloride	**4.4**		1.0	0.45	ug/L			08/23/22 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/23/22 20:16*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/23/22 20:16*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 20:16*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/23/22 20:16*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171856-B-3 MS	Matrix Spike	96	91	94	94
240-171856-C-3 MSD	Matrix Spike Duplicate	100	95	98	98
240-171861-1	TRIP BLANK_06	104	88	95	104
240-171861-2	MW-80SR_081822	103	86	94	102
240-171861-3	DUP-07	102	86	95	100
LCS 240-539824/5	Lab Control Sample	100	94	99	99
MB 240-539824/12	Method Blank	99	84	93	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171824-G-2 MS	Matrix Spike	90
240-171824-M-2 MSD	Matrix Spike Duplicate	90
240-171861-2	MW-80SR_081822	88
240-171861-3	DUP-07	88
LCS 240-540264/3	Lab Control Sample	90
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539824/12
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 14:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 14:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 14:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 14:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/23/22 14:26*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/23/22 14:26*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 14:26*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/23/22 14:26*	*1*

Lab Sample ID: LCS 240-539824/5
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.2		ug/L		91	63 - 134
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	77 - 123
Tetrachloroethene	20.0	20.4		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	17.1		ug/L		86	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.1		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171856-B-3 MS
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 136
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.1		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171856-B-3 MS
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-171856-C-3 MSD
Matrix: Water
Analysis Batch: 539824

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.3		ug/L		101	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	66 - 128	8	14
Tetrachloroethene	1.0	U	20.0	20.9		ug/L		104	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	56 - 136	9	15
Trichloroethene	1.0	U	20.0	19.0		ug/L		95	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	10	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540264/4
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-G-2 MS
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

GC/MS VOA

Analysis Batch: 539824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171861-1	TRIP BLANK_06	Total/NA	Water	8260D	
240-171861-2	MW-80SR_081822	Total/NA	Water	8260D	
240-171861-3	DUP-07	Total/NA	Water	8260D	
MB 240-539824/12	Method Blank	Total/NA	Water	8260D	
LCS 240-539824/5	Lab Control Sample	Total/NA	Water	8260D	
240-171856-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171856-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171861-2	MW-80SR_081822	Total/NA	Water	8260D SIM	
240-171861-3	DUP-07	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171824-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Client Sample ID: TRIP BLANK_06

Lab Sample ID: 240-171861-1
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539824	AJS	EET CAN	08/23/22 19:30

Client Sample ID: MW-80SR_081822

Lab Sample ID: 240-171861-2
Date Collected: 08/18/22 09:25
Matrix: Water
Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539824	AJS	EET CAN	08/23/22 19:53
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 03:18

Client Sample ID: DUP-07

Lab Sample ID: 240-171861-3
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539824	AJS	EET CAN	08/23/22 20:16
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 03:44

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171861-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_080	8/18/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-80sr-081822	08/18/22	0925		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-07	08/18/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-171861 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~12345~~ Brewster ROW

Submit all results through Cadena at jtomaia@cadenaco.com. Caden #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/18/22/1400	Arcadis Cold Stor.	Arcadis	08/18/22/1400
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/19/22/1000		ETA	8/19/22 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	ETA	8/19/22 11:00		ETNL	8-20-22 0935

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171861
Barberton Facility

Client Arcadis Site Name Livonia LTP | Cooler unpacked by: DME

Cooler Received on 8-20-22 Opened on 8-20-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171861-1
Sample date: 2022-08-18
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171861-1

		Sample Name:	TRIP BLANK_06				MW-80SR_081822				DUP-07			
		Lab Sample ID:	2401718611				2401718612				2401718613			
		Sample Date:	8/18/2022				8/18/2022				8/18/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	4.3	1.0	ug/l	---	4.4	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

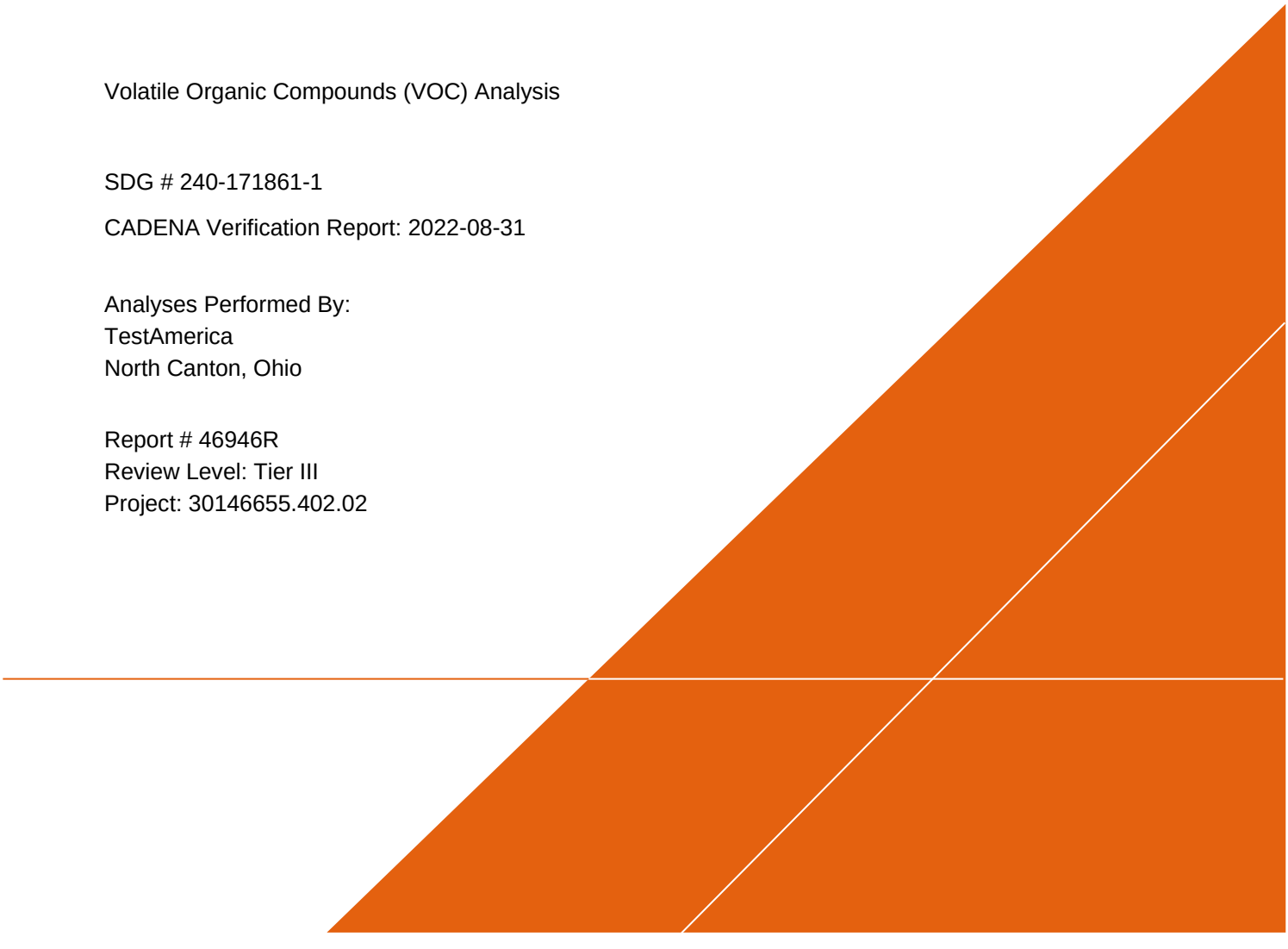
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171861-1

CADENA Verification Report: 2022-08-31

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46946R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171861-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_06	240-171861-1	Water	08/18/22		X	
MW-80SR_081822	240-171861-2	Water	08/18/22		X	X
DUP-07	240-171861-3	Water	08/18/22	MW-80SR_081822	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-80SR_081822 / DUP-07	Vinyl chloride	4.3	4.4	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_080	8/18/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-80sr_081822	08/18/22	0925		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-07	08/18/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-171861 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12584 Brewster ROW

Submit all results through Cadena at jromana@cadenaco.com. Caden #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/15/22/1400	Arcadis Cold Stor.	Arcadis	08/18/22/1400
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/19/22/1000	Gina Rivera	ETA	8/19/22 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/19/22 11:00		EETNC	8-20-22 0935

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08/31/2022

Client Sample ID: TRIP BLANK_06
Lab Sample ID: 240-171861-1
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 09:35

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/23/22 19:30*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/23/22 19:30*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 19:30*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/23/22 19:30*	*1*

Client Sample ID: MW-80SR_081822
Lab Sample ID: 240-171861-2
Date Collected: 08/18/22 09:25
Matrix: Water
Date Received: 08/20/22 09:35

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 03:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 03:18*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 19:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 19:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 19:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 19:53	1
Vinyl chloride	**4.3**		1.0	0.45	ug/L			08/23/22 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/23/22 19:53*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/23/22 19:53*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 19:53*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/23/22 19:53*	*1*

Client Sample ID: DUP-07
Lab Sample ID: 240-171861-3
Date Collected: 08/18/22 00:00
Matrix: Water
Date Received: 08/20/22 09:35

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 03:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 03:44*	*1*

Client Sample ID: DUP-07
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171861-3
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 20:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 20:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 20:16	1
Vinyl chloride	**4.4**		1.0	0.45	ug/L			08/23/22 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/23/22 20:16*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/23/22 20:16*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 20:16*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/23/22 20:16*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171820-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 8:50:41 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Job ID: 240-171820-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171820-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. additional The temperature of the cooler at receipt was 4.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171820-1	TRIP BLANK_98	Water	08/17/22 00:00	08/19/22 09:50
240-171820-2	MW-82D_081722	Water	08/17/22 13:00	08/19/22 09:50
240-171820-3	MW-82SR_081722	Water	08/17/22 11:55	08/19/22 09:50
240-171820-4	MW-134S_081722	Water	08/17/22 13:55	08/19/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Client Sample ID: TRIP BLANK_98 — Lab Sample ID: 240-171820-1

No Detections.

Client Sample ID: MW-82D_081722 — Lab Sample ID: 240-171820-2

No Detections.

Client Sample ID: MW-82SR_081722 — Lab Sample ID: 240-171820-3

No Detections.

Client Sample ID: MW-134S_081722 — Lab Sample ID: 240-171820-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Client Sample ID: TRIP BLANK_98
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171820-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 17:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 17:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*08/22/22 17:54*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/22/22 17:54*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/22/22 17:54*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 17:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Client Sample ID: MW-82D_081722
Date Collected: 08/17/22 13:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171820-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 01:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/25/22 01:15*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 18:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/22/22 18:19*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 18:19*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 18:19*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/22/22 18:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Client Sample ID: MW-82SR_081722
Date Collected: 08/17/22 11:55
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171820-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 01:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/25/22 01:40*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 18:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 18:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 18:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/22/22 18:44*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/22/22 18:44*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 18:44*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 18:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Client Sample ID: MW-134S_081722
Date Collected: 08/17/22 13:55
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171820-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 02:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/25/22 02:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 19:09*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 19:09*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 19:09*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 19:09*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171820-1	TRIP BLANK_98	85	92	92	86
240-171820-2	MW-82D_081722	90	95	95	89
240-171820-3	MW-82SR_081722	87	97	95	86
240-171820-4	MW-134S_081722	89	94	94	86
240-171821-E-4 MSD	Matrix Spike Duplicate	85	93	95	86
240-171821-H-4 MS	Matrix Spike	88	91	96	88
LCS 240-539643/5	Lab Control Sample	86	92	97	86
MB 240-539643/8	Method Blank	89	95	95	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171820-2	MW-82D_081722	88
240-171820-3	MW-82SR_081722	90
240-171820-4	MW-134S_081722	90
240-171821-I-4 MS	Matrix Spike	86
240-171821-M-4 MSD	Matrix Spike Duplicate	88
LCS 240-540081/3	Lab Control Sample	91
MB 240-540081/4	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539643/8
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 12:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 12:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 12:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 12:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 12:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 12:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 12:29*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 12:29*	*1*

Lab Sample ID: LCS 240-539643/5
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.0		ug/L		85	77 - 123
Tetrachloroethene	20.0	19.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	17.5		ug/L		88	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	18.3		ug/L		91	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-H-4 MS
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.8		ug/L		84	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*08/24/22 18:05*	*1*

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171821-I-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-M-4 MSD
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

GC/MS VOA

Analysis Batch: 539643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171820-1	TRIP BLANK_98	Total/NA	Water	8260D	
240-171820-2	MW-82D_081722	Total/NA	Water	8260D	
240-171820-3	MW-82SR_081722	Total/NA	Water	8260D	
240-171820-4	MW-134S_081722	Total/NA	Water	8260D	
MB 240-539643/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539643/5	Lab Control Sample	Total/NA	Water	8260D	
240-171821-E-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171821-H-4 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171820-2	MW-82D_081722	Total/NA	Water	8260D SIM	
240-171820-3	MW-82SR_081722	Total/NA	Water	8260D SIM	
240-171820-4	MW-134S_081722	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171821-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Client Sample ID: TRIP BLANK_98

Lab Sample ID: 240-171820-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 17:54

Client Sample ID: MW-82D_081722

Lab Sample ID: 240-171820-2
Date Collected: 08/17/22 13:00
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 18:19
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 01:15

Client Sample ID: MW-82SR_081722

Lab Sample ID: 240-171820-3
Date Collected: 08/17/22 11:55
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 18:44
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 01:40

Client Sample ID: MW-134S_081722

Lab Sample ID: 240-171820-4
Date Collected: 08/17/22 13:55
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 19:09
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 02:06

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171820-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30080642.402.04	Shipping/Tracking No:		
PO # 30080642.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_98	8/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-82D_081722	8/17/22	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-82SR_081722		1155		6						6					N	G	X	X	X	X	X	X	X	
MW-1345_081722		1355		6						6					N	G	X	X	X	X	X	X	X	

240-171820 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Stark Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Heaven	ARCADIS	8/17/22 1600	NOVI COLD STORAGE	ARCADIS	8/17/22 1600
[illegible]	Arcadis	8/18/22 950	Gina Rivera	CTA	8-18-22 9:50
Gina Rivera	CTA	8-18-22 1700	Received in Laboratory by: [illegible]	CTA	8/19-22 9:50

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9/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171820
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-19-22 Opened on 8-19-22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TK Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.8 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity ____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

September 02, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171820-1
Sample date: 2022-08-17
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-02
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171820-1

		Sample Name:	TRIP BLANK_98				MW-82D_081722				MW-82SR_081722				MW-134S_081722			
		Lab Sample ID:	2401718201				2401718202				2401718203				2401718204			
		Sample Date:	8/17/2022				8/17/2022				8/17/2022				8/17/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

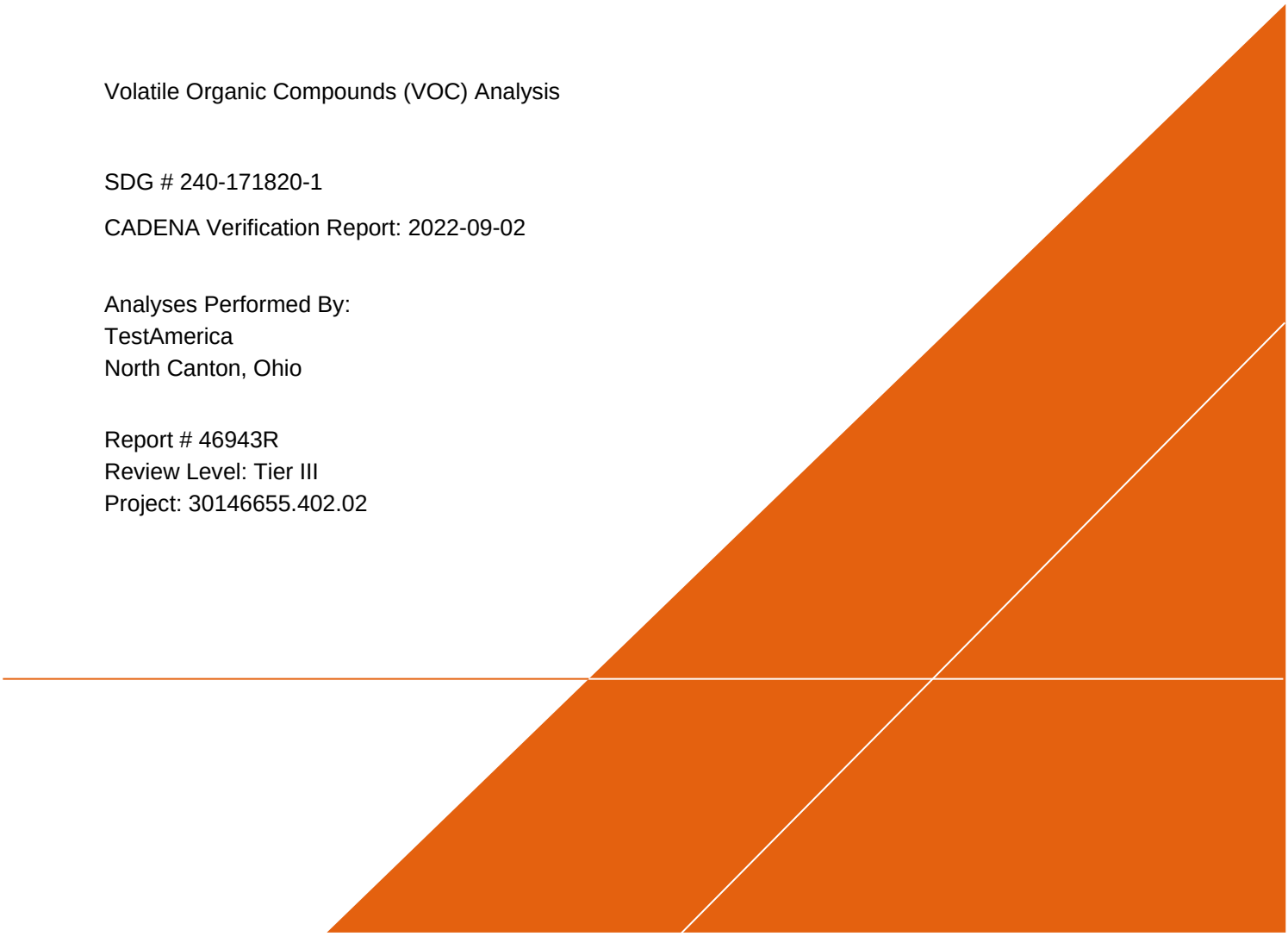
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171820-1

CADENA Verification Report: 2022-09-02

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46943R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171820-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_98	240-171820-1	Water	08/17/22		X	
MW-82D_081722	240-171820-2	Water	08/17/22		X	X
MW-82SR_081722	240-171820-3	Water	08/17/22		X	X
MW-134S_081722	240-171820-4	Water	08/17/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_98	8/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-82D_081722	8/17/22	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-82SR_081722		1155		6						6					N	G	X	X	X	X	X	X	X	
MW-1345_081722		1355		6						6					N	G	X	X	X	X	X	X	X	

240-171820 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Stark ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/17/22 1600	NOVI COLD STORAGE	ARCADIS	8/17/22 1600
Stark Row	Arcadis	8/18/22 950	Gina Rivera	CTA	8-18-22 9:50
Gina Rivera	CTA	8-18-22 1700	Received in Laboratory by:	Company:	Date/Time: 8/19-22 9:30

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Client Sample ID: TRIP BLANK_98
Lab Sample ID: 240-171820-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 17:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 17:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*08/22/22 17:54*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/22/22 17:54*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/22/22 17:54*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 17:54*	*1*

Client Sample ID: MW-82D_081722
Lab Sample ID: 240-171820-2
Date Collected: 08/17/22 13:00
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 01:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/25/22 01:15*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 18:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/22/22 18:19*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 18:19*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 18:19*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/22/22 18:19*	*1*

Client Sample ID: MW-82SR_081722
Lab Sample ID: 240-171820-3
Date Collected: 08/17/22 11:55
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 01:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/25/22 01:40*	*1*

Client Sample ID: MW-82SR_081722
Lab Sample ID: 240-171820-3

Date Collected: 08/17/22 11:55
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 18:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 18:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 18:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/22/22 18:44*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/22/22 18:44*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 18:44*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 18:44*	*1*

Client Sample ID: MW-134S_081722
Lab Sample ID: 240-171820-4

Date Collected: 08/17/22 13:55
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 02:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/25/22 02:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 19:09*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 19:09*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 19:09*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 19:09*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171736-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:30:13 PM
Nicole Kalis, Project Manager I
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171736-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171736-1

Comments
No additional comments.

Receipt
The samples were received on 8/18/2022 2:08 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6º C and 4.3º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-539547 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_113 (240-171736-1), MW-83S_081622 (240-171736-2), MW-83S-MS_081622 (240-171736-2[MS]), MW-83S-MSD_081622 (240-171736-2[MSD]), MW-83_081622 (240-171736-3), (CCV 240-539547/4), (CCVIS 240-539547/3), (LCS 240-539547/5), (LCS 240-539547/6) and (MB 240-539547/8).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171736-1	TRIP BLANK_113	Water	08/16/22 00:00	08/18/22 14:08
240-171736-2	MW-83S_081622	Water	08/16/22 12:50	08/18/22 14:08
240-171736-3	MW-83_081622	Water	08/16/22 11:50	08/18/22 14:08

Detection Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-171736-1
Project/Site: Ford LTP - Off Site

Client Sample ID: TRIP BLANK_113 — Lab Sample ID: 240-171736-1

No Detections.

Client Sample ID: MW-83S_081622 — Lab Sample ID: 240-171736-2

No Detections.

Client Sample ID: MW-83_081622 — Lab Sample ID: 240-171736-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Client Sample ID: TRIP BLANK_113
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171736-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 17:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 17:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 17:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 17:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 17:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/19/22 17:04*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 17:04*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 17:04*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/19/22 17:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Client Sample ID: MW-83S_081622
Date Collected: 08/16/22 12:50
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171736-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 22:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/23/22 22:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 20:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 20:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 20:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 20:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/19/22 20:14*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 20:14*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 20:14*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/19/22 20:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Client Sample ID: MW-83_081622
Date Collected: 08/16/22 11:50
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171736-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 23:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/23/22 23:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 20:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 20:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 20:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 20:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/19/22 20:38*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/19/22 20:38*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 20:38*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/19/22 20:38*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171736-1	TRIP BLANK_113	100	98	104	106
240-171736-2	MW-83S_081622	103	98	105	108
240-171736-2 MS	MW-83S-MS_081622	97	103	105	104
240-171736-2 MSD	MW-83S-MSD_081622	96	103	107	103
240-171736-3	MW-83_081622	102	99	105	109
LCS 240-539547/5	Lab Control Sample	91	102	109	102
MB 240-539547/8	Method Blank	96	98	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171736-2	MW-83S_081622	73
240-171736-2 MS	MW-83S-MS_081622	75
240-171736-2 MSD	MW-83S-MSD_081622	74
240-171736-3	MW-83_081622	73
LCS 240-539899/3	Lab Control Sample	70
MB 240-539899/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539547/8
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 15:05*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/19/22 15:05*	*1*

Lab Sample ID: LCS 240-539547/5
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	29.2		ug/L		117	76 - 123
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	21.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171736-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: MW-83S-MS_081622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	19.9		ug/L		79	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.2		ug/L		81	56 - 136
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171736-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: MW-83S-MS_081622
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-171736-2 MSD
Matrix: Water
Analysis Batch: 539547

Client Sample ID: MW-83S-MSD_081622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	25.7		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.0		ug/L		88	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539899/4
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 20:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/23/22 20:09*	*1*

Lab Sample ID: LCS 240-539899/3
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.34		ug/L		93	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171736-2 MS
Matrix: Water
Analysis Batch: 539899

Client Sample ID: MW-83S-MS_081622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171736-2 MSD
Matrix: Water
Analysis Batch: 539899

Client Sample ID: MW-83S-MSD_081622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

GC/MS VOA

Analysis Batch: 539547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171736-1	TRIP BLANK_113	Total/NA	Water	8260D	
240-171736-2	MW-83S_081622	Total/NA	Water	8260D	
240-171736-3	MW-83_081622	Total/NA	Water	8260D	
MB 240-539547/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539547/5	Lab Control Sample	Total/NA	Water	8260D	
240-171736-2 MS	MW-83S-MS_081622	Total/NA	Water	8260D	
240-171736-2 MSD	MW-83S-MSD_081622	Total/NA	Water	8260D	

Analysis Batch: 539899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171736-2	MW-83S_081622	Total/NA	Water	8260D SIM	
240-171736-3	MW-83_081622	Total/NA	Water	8260D SIM	
MB 240-539899/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539899/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171736-2 MS	MW-83S-MS_081622	Total/NA	Water	8260D SIM	
240-171736-2 MSD	MW-83S-MSD_081622	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Client Sample ID: TRIP BLANK_113

Lab Sample ID: 240-171736-1
Date Collected: 08/16/22 00:00
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 17:04

Client Sample ID: MW-83S_081622

Lab Sample ID: 240-171736-2
Date Collected: 08/16/22 12:50
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 20:14
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/23/22 22:27

Client Sample ID: MW-83_081622

Lab Sample ID: 240-171736-3
Date Collected: 08/16/22 11:50
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 20:38
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/23/22 23:39

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171736-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_113	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-835_081622	8/16/22	1250		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-835-MS_081622		1256		6						6					N	G	X	X	X	X	X	X	X	for MS/MSD
MW-835-MSD_081622		1250		6						6					N	G	X	X	X	X	X	X	X	for MS/MSD
MW-83_081622		1150		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171736 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: STARK ~~BX~~ ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/16/22 1515	NOVI COLD STORAGE	ARCADIS	8/16/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/17/22 1005		EETA	8/17/22 10:10
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/17/22 10:10		EETNC	8-18-22 1405

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171736
Barberton Facility

Client Arcadis Site Name Ford Livonia

Cooler Received on 8-18-22 Opened on 8-18-22

Cooler unpacked by: (MR)

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171736

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.6	2.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	4.3	4.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171736-1
Sample date: 2022-08-16
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-30
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171736-1

		Sample Name:	TRIP BLANK_113				MW-83S_081622				MW-83_081622			
		Lab Sample ID:	2401717361				2401717362				2401717363			
		Sample Date:	8/16/2022				8/16/2022				8/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

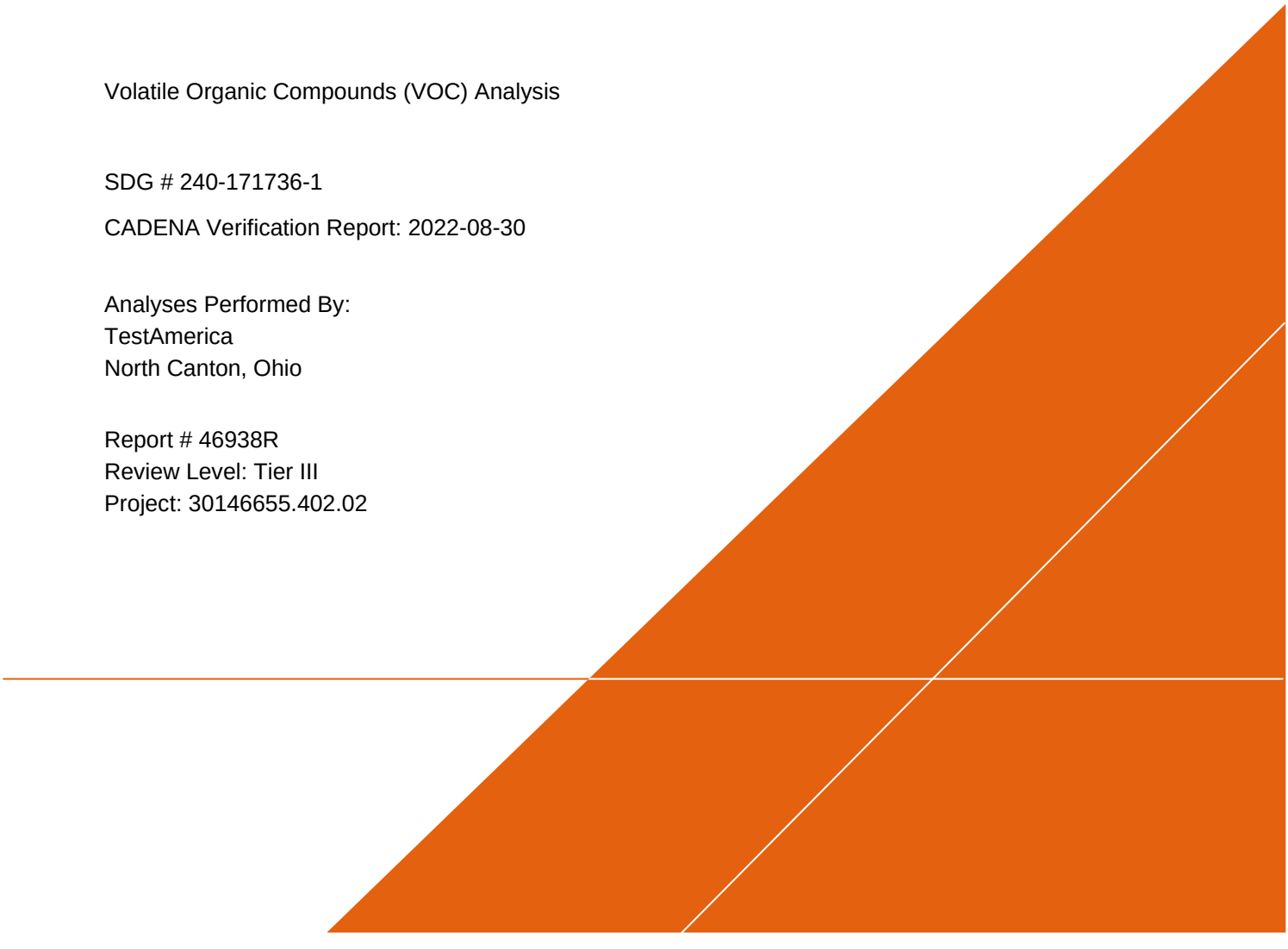
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171736-1

CADENA Verification Report: 2022-08-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46938R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171736-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_113	240-171736-1	Water	08/16/22		X	
MW-83S_081622	240-171736-2	Water	08/16/22		X	X
MW-83_081622	240-171736-3	Water	08/16/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_113 MW-83S_081622 MW-83_081622	Continuous Calibration Verification %D	Tetrachloroethene	+21.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_113	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-835_081622	8/16/22	1250		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-835-MS_081622		1256		6						6					N	G	X	X	X	X	X	X	X	for MS/MSD
MW-835-MSD_081622		1250		6						6					N	G	X	X	X	X	X	X	X	for MS/MSD
MW-83_081622		1150		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171736 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: STARK ~~ROW~~ ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/16/22 1515	NOVI COLD STORAGE	ARCADIS	8/16/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/17/22 1005		EETA	8/17/22 10:10
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	8/17/22 10:10		EETNC	8-18-22 1408

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Client Sample ID: TRIP BLANK_113
Lab Sample ID: 240-171736-1
Date Collected: 08/16/22 00:00
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 17:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 17:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 17:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 17:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 17:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/19/22 17:04*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 17:04*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 17:04*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/19/22 17:04*	*1*

Client Sample ID: MW-83S_081622
Lab Sample ID: 240-171736-2
Date Collected: 08/16/22 12:50
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 22:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/23/22 22:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 20:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 20:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 20:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 20:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/19/22 20:14*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 20:14*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 20:14*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/19/22 20:14*	*1*

Client Sample ID: MW-83_081622
Lab Sample ID: 240-171736-3
Date Collected: 08/16/22 11:50
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 23:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/23/22 23:39*	*1*

Client Sample ID: MW-83_081622
Lab Sample ID: 240-171736-3

Date Collected: 08/16/22 11:50
Matrix: Water
Date Received: 08/18/22 14:08

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 20:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 20:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 20:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 20:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 20:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/19/22 20:38*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/19/22 20:38*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 20:38*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/19/22 20:38*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171039-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:36:46 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171039-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171039-1

Comments
No additional comments.

Receipt
The samples were received on 8/5/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7º C.

GC/MS VOA
Method 8260D: The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK_47 (240-171039-1) and MW-84_080322 (240-171039-2) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171039-1	TRIP BLANK_47	Water	08/03/22 00:00	08/05/22 09:50
240-171039-2	MW-84_080322	Water	08/03/22 14:08	08/05/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Client Sample ID: TRIP BLANK_47 — Lab Sample ID: 240-171039-1

No Detections.

Client Sample ID: MW-84_080322 — Lab Sample ID: 240-171039-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Client Sample ID: TRIP BLANK_47

Date Collected: 08/03/22 00:00
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171039-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 18:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 18:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 18:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/09/22 18:42*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*08/09/22 18:42*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/09/22 18:42*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/09/22 18:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Client Sample ID: MW-84_080322
Date Collected: 08/03/22 14:08
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171039-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 20:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/09/22 20:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 19:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 19:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 19:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/09/22 19:06*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/09/22 19:06*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/09/22 19:06*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*08/09/22 19:06*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171039-1	TRIP BLANK_47	99	81	87	107
240-171039-2	MW-84_080322	104	89	95	113
LCS 240-538105/5	Lab Control Sample	96	94	92	107
MB 240-538105/8	Method Blank	101	92	93	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171039-2	MW-84_080322	88
240-171040-F-4 MS	Matrix Spike	81
240-171040-F-4 MSD	Matrix Spike Duplicate	87
LCS 240-538123/4	Lab Control Sample	87
MB 240-538123/6	Method Blank	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538105/8
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 12:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/09/22 12:58*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 12:58*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/09/22 12:58*	*1*

Lab Sample ID: LCS 240-538105/5
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	20.0	19.3		ug/L		97	77 - 123
Tetrachloroethene	20.0	21.3		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	18.2		ug/L		91	75 - 124
Trichloroethene	20.0	20.5		ug/L		103	70 - 122
Vinyl chloride	20.0	18.1		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-F-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

GC/MS VOA

Analysis Batch: 538105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171039-1	TRIP BLANK_47	Total/NA	Water	8260D	
240-171039-2	MW-84_080322	Total/NA	Water	8260D	
MB 240-538105/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538105/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171039-2	MW-84_080322	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-F-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171040-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Client Sample ID: TRIP BLANK_47

Lab Sample ID: 240-171039-1

Date Collected: 08/03/22 00:00

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 18:42

Client Sample ID: MW-84_080322

Lab Sample ID: 240-171039-2

Date Collected: 08/03/22 14:08

Matrix: Water

Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 19:06
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 20:23

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171039-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 47	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-84_080322	8/3/22	1408		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171039 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/3/22 1515	Novi Cold Storage	Arcadis	8/3/22 1515
[signature]	Arcadis	8/4/22 1250	[signature]	EEM	8/4/22
[signature]	EEM	8/4/22	[signature]	EEM	8-5-22 9:50

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171039
Barberton Facility

Client ArcadD Site Name _____ Cooler unpacked by: Marilyn Blee

Cooler Received on 8-5-22 Opened on 8-5-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171039-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171039-1

		Sample Name:	TRIP BLANK_47				MW-84_080322			
		Lab Sample ID:	2401710391				2401710392			
		Sample Date:	8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

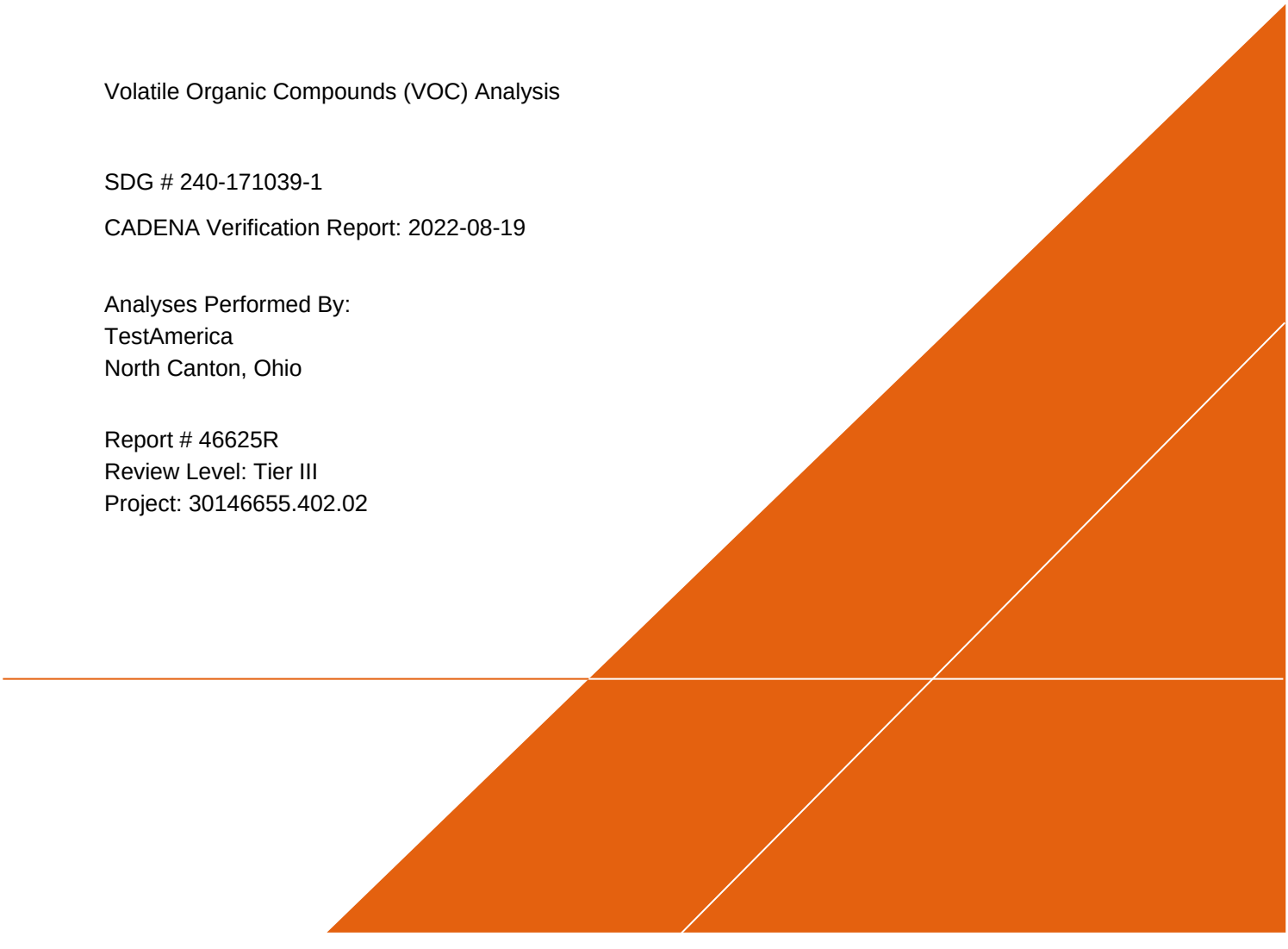
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171039-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46625R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171039-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_47	240-171039-1	Water	08/03/22		X	
MW-84_080322	240-171039-2	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 47	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-84_080322	8/3/22	1408		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171039 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	8/3/22 1515	Received by: Novi Cold Storage	Arcadis	8/3/22 1515
Relinquished by:	Arcadis	8/4/22 1250	Received by:	EEMA	8/4/22
Relinquished by:	EEMA	8/4/22	Received in Laboratory by:	EEMC	8-5-22 9:50

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08/19/2022

Client Sample ID: TRIP BLANK_47
Lab Sample ID: 240-171039-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 18:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 18:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 18:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 18:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/09/22 18:42*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*08/09/22 18:42*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/09/22 18:42*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/09/22 18:42*	*1*

Client Sample ID: MW-84_080322
Lab Sample ID: 240-171039-2
Date Collected: 08/03/22 14:08
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 20:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/09/22 20:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 19:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 19:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 19:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/09/22 19:06*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/09/22 19:06*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/09/22 19:06*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*08/09/22 19:06*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171145-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:20:23 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Job ID: 240-171145-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171145-1

Comments
No additional comments.

Receipt
The samples were received on 8/6/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.5º C.

GC/MS VOA
Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected sample is MW-84S_080422 (240-171145-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171145-1	TRIP BLANK_55	Water	08/04/22 00:00	08/06/22 10:00
240-171145-2	MW-84S_080422	Water	08/04/22 14:13	08/06/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Client Sample ID: TRIP BLANK_55 — Lab Sample ID: 240-171145-1

No Detections.

Client Sample ID: MW-84S_080422 — Lab Sample ID: 240-171145-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Client Sample ID: TRIP BLANK_55

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171145-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/10/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 15:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/10/22 15:02*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/10/22 15:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Client Sample ID: MW-84S_080422
Date Collected: 08/04/22 14:13
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171145-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/10/22 16:35*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 19:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/10/22 19:23*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/10/22 19:23*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 19:23*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*08/10/22 19:23*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-A-21 MS	Matrix Spike	98	99	106	105
240-171141-A-21 MSD	Matrix Spike Duplicate	95	100	106	103
240-171145-1	TRIP BLANK_55	102	95	103	108
240-171145-2	MW-84S_080422	107	99	104	112
LCS 240-538306/5	Lab Control Sample	95	100	108	103
MB 240-538306/8	Method Blank	101	95	101	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171145-2	MW-84S_080422	82
LCS 240-538297/4	Lab Control Sample	81
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538306/8
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 13:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 13:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 13:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 13:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/10/22 13:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 13:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/10/22 13:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/10/22 13:27*	*1*

Lab Sample ID: LCS 240-538306/5
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	27.0		ug/L		108	70 - 122
Vinyl chloride	25.0	22.3		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	500	446		ug/L		89	56 - 135
cis-1,2-Dichloroethene	55		500	503		ug/L		90	66 - 128
Tetrachloroethene	870		500	1310	E	ug/L		87	62 - 131
trans-1,2-Dichloroethene	20	U	500	441		ug/L		88	56 - 136
Trichloroethene	71		500	555		ug/L		97	61 - 124
Vinyl chloride	20	U	500	435		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-A-21 MS
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171141-A-21 MSD
Matrix: Water
Analysis Batch: 538306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	500	430		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	55		500	490		ug/L		87	66 - 128	3	14
Tetrachloroethene	870		500	1290	E	ug/L		83	62 - 131	2	20
trans-1,2-Dichloroethene	20	U	500	426		ug/L		85	56 - 136	3	15
Trichloroethene	71		500	529		ug/L		92	61 - 124	5	15
Vinyl chloride	20	U	500	413		ug/L		83	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

GC/MS VOA

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171145-2	MW-84S_080422	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 538306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171145-1	TRIP BLANK_55	Total/NA	Water	8260D	
240-171145-2	MW-84S_080422	Total/NA	Water	8260D	
MB 240-538306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171141-A-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Client Sample ID: TRIP BLANK_55

Lab Sample ID: 240-171145-1

Date Collected: 08/04/22 00:00

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 15:02

Client Sample ID: MW-84S_080422

Lab Sample ID: 240-171145-2

Date Collected: 08/04/22 14:13

Matrix: Water

Date Received: 08/06/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538306	SAM	EET CAN	08/10/22 19:23
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 16:35

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

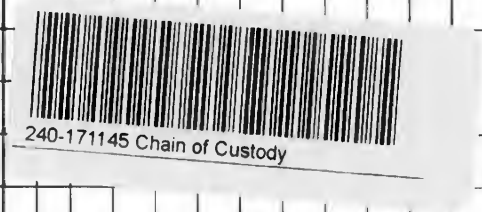
TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_55	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-845_080422	8/4/22	1413		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM



Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	8/4/22 1510	Novi Cold Storage	Arcadis	8/4/22 1510
Relinquished by: Stu Turner	Arcadis	8/5/22 1000	Received by: Jeri Hall	EEPA	8/5/22 1001
Relinquished by: Jeri Hall	EEPA	8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171145
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler Received on 8-6-22 Opened on 8-6-22

Cooler unpacked by: JMR

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171145

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	4.5	4.5	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.9	2.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
				☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171145-1
Sample date: 2022-08-04
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171145-1

		Sample Name:	TRIP BLANK_55				MW-84S_080422			
		Lab Sample ID:	2401711451				2401711452			
		Sample Date:	8/4/2022				8/4/2022			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

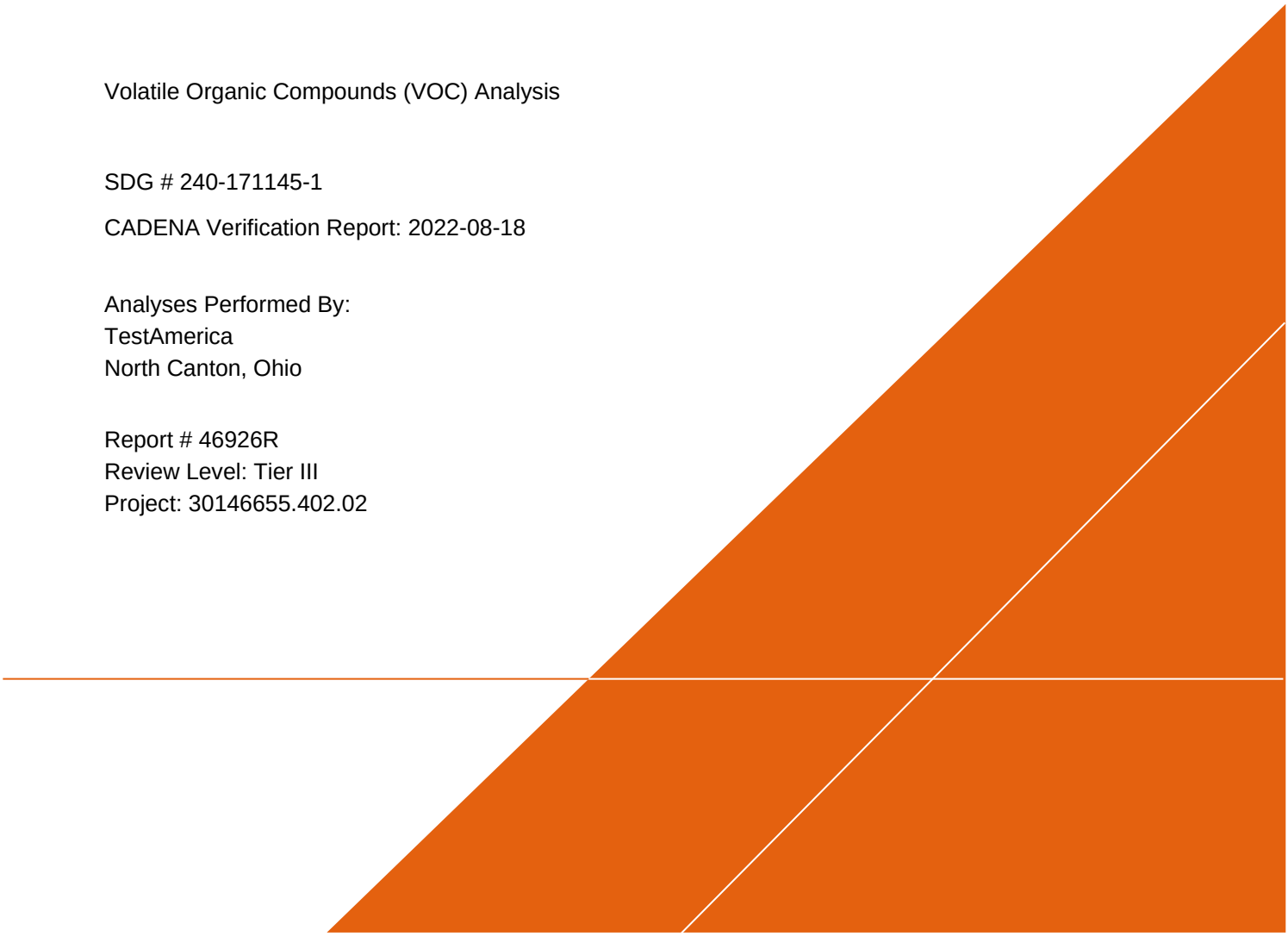
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171145-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46926R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171145-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_55	240-171145-1	Water	08/04/22		X	
MW-84S_080422	240-171145-2	Water	08/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 20, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_55	8/4/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-845_080422	8/4/22	1413		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171145 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	8/4/22 1510	Novi Cold Storage	Arcadis	8/4/22 1510
Relinquished by:	Arcadis	8/5/22 1000	Received by:	EETA	8/5/22 1001
Relinquished by:	EETA	8/5/22 1030	Received in Laboratory by:	Company:	Date/Time:

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Client Sample ID: TRIP BLANK_55

Date Collected: 08/04/22 00:00
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171145-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 15:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/10/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/10/22 15:02*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/10/22 15:02*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/10/22 15:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171145-1

Client Sample ID: MW-84S_080422
Date Collected: 08/04/22 14:13
Date Received: 08/06/22 10:00

Lab Sample ID: 240-171145-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/10/22 16:35*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/10/22 19:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/10/22 19:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/10/22 19:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/10/22 19:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/10/22 19:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/10/22 19:23*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/10/22 19:23*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/10/22 19:23*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*08/10/22 19:23*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171589-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171589-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171589-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171589-1	TRIP BLANK_74	Water	08/12/22 00:00	08/16/22 09:00
240-171589-2	MW-85_081222	Water	08/12/22 10:15	08/16/22 09:00
240-171589-3	MW-85SR_081222	Water	08/12/22 09:25	08/16/22 09:00
240-171589-4	MW-102_081222	Water	08/12/22 11:30	08/16/22 09:00
240-171589-5	MW-102S_081222	Water	08/12/22 12:40	08/16/22 09:00
240-171589-6	DUP-08	Water	08/12/22 00:00	08/16/22 09:00
240-171589-7	DUP-10	Water	08/12/22 00:00	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: TRIP BLANK_74 — Lab Sample ID: 240-171589-1

No Detections.

Client Sample ID: MW-85_081222 — Lab Sample ID: 240-171589-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	4.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-85SR_081222 — Lab Sample ID: 240-171589-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-102_081222 — Lab Sample ID: 240-171589-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.8		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-102S_081222 — Lab Sample ID: 240-171589-5

No Detections.

Client Sample ID: DUP-08 — Lab Sample ID: 240-171589-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	5.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-10 — Lab Sample ID: 240-171589-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: TRIP BLANK_74
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 15:04*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 15:04*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 15:04*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/17/22 15:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: MW-85_081222
Date Collected: 08/12/22 10:15
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 00:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/21/22 00:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:49	1
Vinyl chloride	**4.9**		1.0	0.45	ug/L			08/17/22 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 18:49*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 18:49*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 18:49*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/17/22 18:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: MW-85SR_081222
Date Collected: 08/12/22 09:25
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 00:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/21/22 00:38*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:15	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			08/17/22 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/17/22 19:15*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/17/22 19:15*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/17/22 19:15*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/17/22 19:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: MW-102_081222
Date Collected: 08/12/22 11:30
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 01:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/21/22 01:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:40	1
Vinyl chloride	**2.8**		1.0	0.45	ug/L			08/17/22 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/17/22 19:40*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/17/22 19:40*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/17/22 19:40*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/17/22 19:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: MW-102S_081222
Date Collected: 08/12/22 12:40
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*67*		*66 - 120*		*08/22/22 18:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/17/22 20:05*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 20:05*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/17/22 20:05*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/17/22 20:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: DUP-08
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*08/22/22 19:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:30	1
Vinyl chloride	**5.2**		1.0	0.45	ug/L			08/17/22 20:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/17/22 20:30*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 20:30*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/17/22 20:30*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/17/22 20:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: DUP-10
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/22/22 19:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:55	1
Vinyl chloride	**3.1**		1.0	0.45	ug/L			08/17/22 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/17/22 20:55*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 20:55*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/17/22 20:55*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/17/22 20:55*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171526-D-11 MS	Matrix Spike	93	96	98	84
240-171526-I-11 MSD	Matrix Spike Duplicate	92	96	97	85
240-171589-1	TRIP BLANK_74	96	86	94	85
240-171589-2	MW-85_081222	99	86	94	86
240-171589-3	MW-85SR_081222	101	89	97	88
240-171589-4	MW-102_081222	98	85	95	84
240-171589-5	MW-102S_081222	100	88	96	85
240-171589-6	DUP-08	102	88	95	87
240-171589-7	DUP-10	101	90	96	86
LCS 240-539235/4	Lab Control Sample	88	96	96	82
MB 240-539235/6	Method Blank	96	90	97	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171589-2	MW-85_081222	70
240-171589-3	MW-85SR_081222	72
240-171589-4	MW-102_081222	74
240-171589-5	MW-102S_081222	67
240-171589-6	DUP-08	76
240-171589-7	DUP-10	72
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
LCS 240-539584/3	Lab Control Sample	75
LCS 240-539746/3	Lab Control Sample	80
MB 240-539584/5	Method Blank	77
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539235/6
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 13:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 13:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 13:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 13:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 13:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 13:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 13:49*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 13:49*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/17/22 13:49*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/17/22 13:49*	*1*

Lab Sample ID: LCS 240-539235/4
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.7		ug/L		91	63 - 134
cis-1,2-Dichloroethene	25.0	21.7		ug/L		87	77 - 123
Tetrachloroethene	25.0	21.6		ug/L		87	76 - 123
trans-1,2-Dichloroethene	25.0	21.8		ug/L		87	75 - 124
Trichloroethene	25.0	20.7		ug/L		83	70 - 122
Vinyl chloride	12.5	11.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Lab Sample ID: 240-171526-D-11 MS
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	19.8		ug/L		79	61 - 124
Vinyl chloride	1.0	U	12.5	11.9		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171526-I-11 MSD
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	22.0		ug/L		88	62 - 131	9	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	6	15
Trichloroethene	1.0	U	25.0	21.5		ug/L		86	61 - 124	8	15
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.4		ug/L		104	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/22/22 17:51*	*1*

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.98		ug/L		90	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

GC/MS VOA

Analysis Batch: 539235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171589-1	TRIP BLANK_74	Total/NA	Water	8260D	
240-171589-2	MW-85_081222	Total/NA	Water	8260D	
240-171589-3	MW-85SR_081222	Total/NA	Water	8260D	
240-171589-4	MW-102_081222	Total/NA	Water	8260D	
240-171589-5	MW-102S_081222	Total/NA	Water	8260D	
240-171589-6	DUP-08	Total/NA	Water	8260D	
240-171589-7	DUP-10	Total/NA	Water	8260D	
MB 240-539235/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539235/4	Lab Control Sample	Total/NA	Water	8260D	
240-171526-D-11 MS	Matrix Spike	Total/NA	Water	8260D	
240-171526-I-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171589-2	MW-85_081222	Total/NA	Water	8260D SIM	
240-171589-3	MW-85SR_081222	Total/NA	Water	8260D SIM	
240-171589-4	MW-102_081222	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171589-5	MW-102S_081222	Total/NA	Water	8260D SIM	
240-171589-6	DUP-08	Total/NA	Water	8260D SIM	
240-171589-7	DUP-10	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: TRIP BLANK_74
Lab Sample ID: 240-171589-1
Date Collected: 08/12/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 15:04

Client Sample ID: MW-85_081222
Lab Sample ID: 240-171589-2
Date Collected: 08/12/22 10:15
Matrix: Water
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 18:49
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/21/22 00:14

Client Sample ID: MW-85SR_081222
Lab Sample ID: 240-171589-3
Date Collected: 08/12/22 09:25
Matrix: Water
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 19:15
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/21/22 00:38

Client Sample ID: MW-102_081222
Lab Sample ID: 240-171589-4
Date Collected: 08/12/22 11:30
Matrix: Water
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 19:40
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/21/22 01:01

Client Sample ID: MW-102S_081222
Lab Sample ID: 240-171589-5
Date Collected: 08/12/22 12:40
Matrix: Water
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 20:05
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 18:42

Client Sample ID: DUP-08
Lab Sample ID: 240-171589-6
Date Collected: 08/12/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 20:30
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 19:06

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Client Sample ID: DUP-10

Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 20:55
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 19:30

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171589-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 74	~~8/12/22~~	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-85_081222	8/12/22	1015		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-85SR_081222		925		6						6					N	G	X	X	X	X	X	X	X	
MW-102_081222		1130		6						6					N	G	X	X	X	X	X	X	X	
MW-102S_081222		1240		6						6					N	G	X	X	X	X	X	X	X	
DUP-08		—		6						6					N	G	X	X	X	X	X	X	X	
DUP-10		—		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1
☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: Rosati Ave.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

240-171589 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/12/22 1335	NOVI COLD STORAGE	ARCADIS	8/12/22 1335
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
	EETA	8/15/22 10:00	Received in Laboratory by:	EETNC	8-16-22 0900

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 171585
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by: DMD

Cooler Received on 8-16-22 Opened on 8-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water ☑ None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171589

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171589-1
Sample date: 2022-08-12
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:7
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171589-1

	Sample Name:	TRIP BLANK_74				MW-85_081222				MW-85SR_081222				MW-102_081222				MW-102S_081222				DUP-08				DUP-10			
	Lab Sample ID:	2401715891				2401715892				2401715893				2401715894				2401715895				2401715896				2401715897			
	Sample Date:	8/12/2022				8/12/2022				8/12/2022				8/12/2022				8/12/2022				8/12/2022				8/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																													
OSW-8260D																													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	4.9	1.0	ug/l	---	1.1	1.0	ug/l	---	2.8	1.0	ug/l	---	ND	1.0	ug/l	---	5.2	1.0	ug/l	---	3.1	1.0	ug/l	---
OSW-8260DSIM																													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

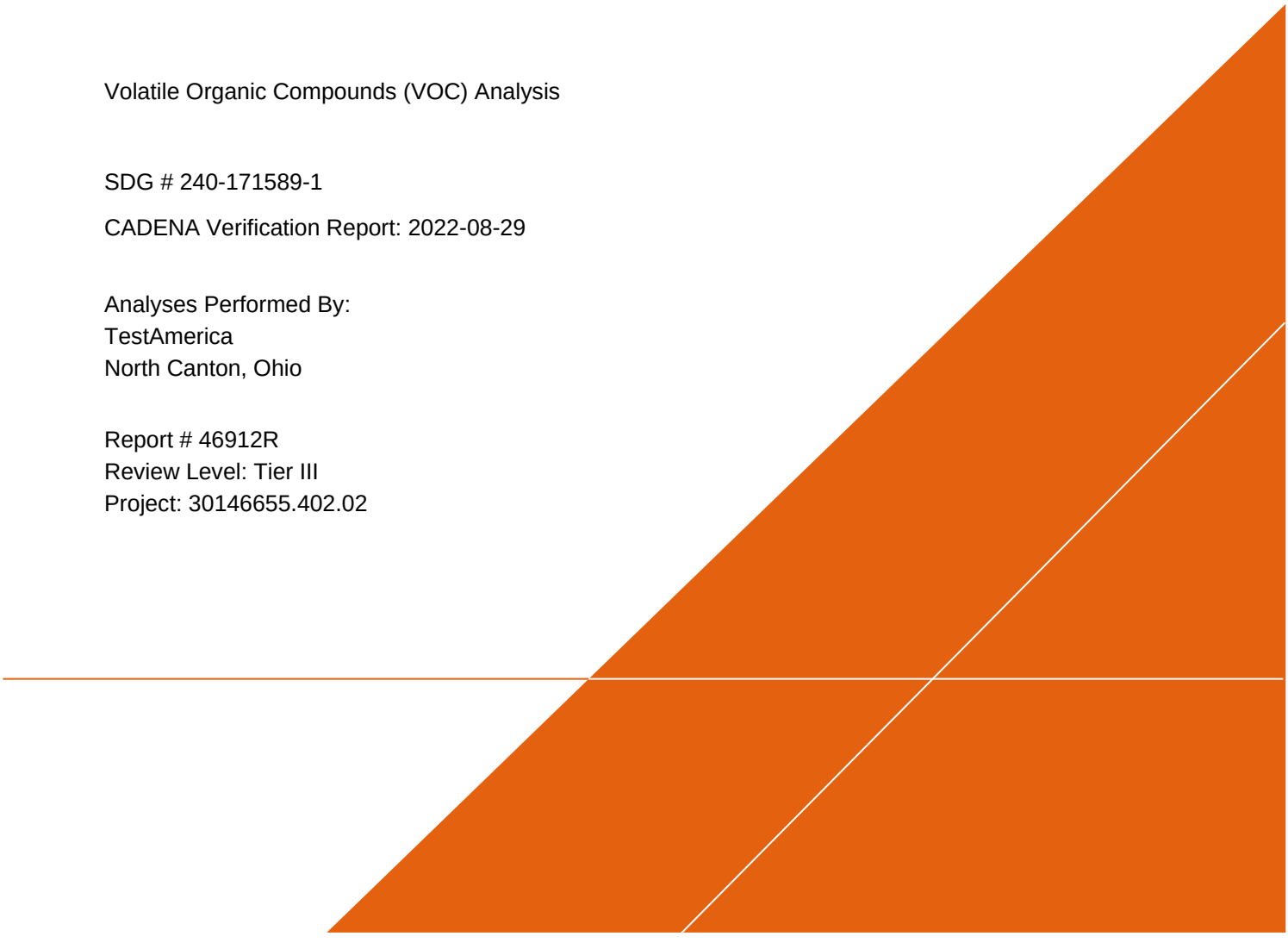
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171589-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46912R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171589-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_74	240-171589-1	Water	08/12/22		X	
MW-85_081222	240-171589-2	Water	08/12/22		X	X
MW-85SR_081222	240-171589-3	Water	08/12/22		X	X
MW-102_081222	240-171589-4	Water	08/12/22		X	X
MW-102S_081222	240-171589-5	Water	08/12/22		X	X
DUP-08	240-171589-6	Water	08/12/22	MW-85_081222	X	X
DUP-10	240-171589-7	Water	08/12/22	MW-102_081222	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

DATA REVIEW

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-85_081222 / DUP-08	Vinyl chloride	4.9	5.2	AC
MW-102_081222 / DUP-12	Vinyl chloride	2.8	3.1	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_74	8/12/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-85_081222	8/12/22	1015		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D
MW-85SR_081222		925		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D SIM
MW-102_081222		1130		6						6					N	G	X	X	X	X	X	X	X	
MW-102S_081222		1240		6						6					N	G	X	X	X	X	X	X	X	
DUP-08		—		6						6					N	G	X	X	X	X	X	X	X	
DUP-10		—		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati Ave.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

240-171589 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/12/22 1335	NOVI COLD STORAGE	ARCADIS	8/12/22 1335
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
	EETA	8/15/22 10:00	Received in Laboratory by:	EETNC	8-16-22 0900

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Client Sample ID: TRIP BLANK_74
Lab Sample ID: 240-171589-1
Date Collected: 08/12/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 15:04*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 15:04*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 15:04*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/17/22 15:04*	*1*

Client Sample ID: MW-85_081222
Lab Sample ID: 240-171589-2
Date Collected: 08/12/22 10:15
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 00:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/21/22 00:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:49	1
Vinyl chloride	**4.9**		1.0	0.45	ug/L			08/17/22 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 18:49*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/17/22 18:49*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 18:49*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/17/22 18:49*	*1*

Client Sample ID: MW-85SR_081222
Lab Sample ID: 240-171589-3
Date Collected: 08/12/22 09:25
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 00:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/21/22 00:38*	*1*

Client Sample ID: MW-85SR_081222
Lab Sample ID: 240-171589-3
Date Collected: 08/12/22 09:25
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:15	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			08/17/22 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/17/22 19:15*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/17/22 19:15*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/17/22 19:15*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/17/22 19:15*	*1*

Client Sample ID: MW-102_081222
Lab Sample ID: 240-171589-4
Date Collected: 08/12/22 11:30
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/21/22 01:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/21/22 01:01*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 19:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 19:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 19:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 19:40	1
Vinyl chloride	**2.8**		1.0	0.45	ug/L			08/17/22 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/17/22 19:40*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/17/22 19:40*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/17/22 19:40*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/17/22 19:40*	*1*

Client Sample ID: MW-102S_081222
Lab Sample ID: 240-171589-5
Date Collected: 08/12/22 12:40
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*67*		*66 - 120*		*08/22/22 18:42*	*1*

Client Sample ID: MW-102S_081222
Lab Sample ID: 240-171589-5
Date Collected: 08/12/22 12:40
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/17/22 20:05*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 20:05*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/17/22 20:05*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/17/22 20:05*	*1*

Client Sample ID: DUP-08
Lab Sample ID: 240-171589-6
Date Collected: 08/12/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*08/22/22 19:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:30	1
Vinyl chloride	**5.2**		1.0	0.45	ug/L			08/17/22 20:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/17/22 20:30*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/17/22 20:30*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/17/22 20:30*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/17/22 20:30*	*1*

Client Sample ID: DUP-10
Lab Sample ID: 240-171589-7
Date Collected: 08/12/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/22/22 19:30*	*1*

Client Sample ID: DUP-10
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171589-7
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 20:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 20:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 20:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 20:55	1
Vinyl chloride	**3.1**		1.0	0.45	ug/L			08/17/22 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/17/22 20:55*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 20:55*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/17/22 20:55*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/17/22 20:55*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171402-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:36:29 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Job ID: 240-171402-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171402-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 3.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171402-1	TRIP BLANK_64	Water	08/09/22 00:00	08/11/22 09:30
240-171402-2	MW-86_080922	Water	08/09/22 10:00	08/11/22 09:30
240-171402-3	MW-86S_080922	Water	08/09/22 11:20	08/11/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: TRIP BLANK_64 — Lab Sample ID: 240-171402-1

No Detections.

Client Sample ID: MW-86_080922 — Lab Sample ID: 240-171402-2

No Detections.

Client Sample ID: MW-86S_080922 — Lab Sample ID: 240-171402-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: TRIP BLANK_64
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171402-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/12/22 16:09*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/12/22 16:09*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 16:09*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*08/12/22 16:09*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: MW-86_080922

Date Collected: 08/09/22 10:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171402-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 22:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/15/22 22:13*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 21:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 21:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 21:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 21:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/12/22 21:11*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 21:11*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 21:11*	*1*
Dibromofluoromethane (Surr)	*79*		*73 - 120*		*08/12/22 21:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: MW-86S_080922
Date Collected: 08/09/22 11:20
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171402-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 22:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 21:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 21:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 21:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 21:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/12/22 21:35*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/12/22 21:35*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/12/22 21:35*	*1*
Dibromofluoromethane (Surr)	*79*		*73 - 120*		*08/12/22 21:35*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171402-1	TRIP BLANK_64	87	92	95	80
240-171402-2	MW-86_080922	89	94	95	79
240-171402-3	MW-86S_080922	91	89	92	79
240-171402-3 MS	MW-86S-MS_080922	88	95	95	83
240-171402-3 MSD	MW-86S-MSD_080922	89	98	97	81
LCS 240-538724/4	Lab Control Sample	90	97	96	85
MB 240-538724/6	Method Blank	95	94	97	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171402-2	MW-86_080922	90
240-171402-3	MW-86S_080922	88
240-171402-3 MS	MW-86S-MS_080922	89
240-171402-3 MSD	MW-86S-MSD_080922	89
LCS 240-538971/3	Lab Control Sample	85
MB 240-538971/4	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538724/6
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 14:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 14:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 14:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 14:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/12/22 14:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 14:29*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/12/22 14:29*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 14:29*	*1*

Lab Sample ID: LCS 240-538724/4
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.6		ug/L		91	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	22.7		ug/L		91	70 - 122
Vinyl chloride	12.5	12.2		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171402-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: MW-86S-MS_080922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	18.4		ug/L		74	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	56 - 136
Trichloroethene	1.0	U	25.0	19.5		ug/L		78	61 - 124
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171402-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: MW-86S-MS_080922
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Lab Sample ID: 240-171402-3 MSD
Matrix: Water
Analysis Batch: 538724

Client Sample ID: MW-86S-MSD_080922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	66 - 128	9	14
Tetrachloroethene	1.0	U	25.0	19.6		ug/L		78	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	8	15
Trichloroethene	1.0	U	25.0	20.8		ug/L		83	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538971/4
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 20:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/15/22 20:58*	*1*

Lab Sample ID: LCS 240-538971/3
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.74		ug/L		97	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171402-3 MS
Matrix: Water
Analysis Batch: 538971

Client Sample ID: MW-86S-MS_080922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171402-3 MSD
Matrix: Water
Analysis Batch: 538971

Client Sample ID: MW-86S-MSD_080922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

GC/MS VOA

Analysis Batch: 538724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171402-1	TRIP BLANK_64	Total/NA	Water	8260D	
240-171402-2	MW-86_080922	Total/NA	Water	8260D	
240-171402-3	MW-86S_080922	Total/NA	Water	8260D	
MB 240-538724/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538724/4	Lab Control Sample	Total/NA	Water	8260D	
240-171402-3 MS	MW-86S-MS_080922	Total/NA	Water	8260D	
240-171402-3 MSD	MW-86S-MSD_080922	Total/NA	Water	8260D	

Analysis Batch: 538971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171402-2	MW-86_080922	Total/NA	Water	8260D SIM	
240-171402-3	MW-86S_080922	Total/NA	Water	8260D SIM	
MB 240-538971/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538971/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171402-3 MS	MW-86S-MS_080922	Total/NA	Water	8260D SIM	
240-171402-3 MSD	MW-86S-MSD_080922	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: TRIP BLANK_64

Lab Sample ID: 240-171402-1
Date Collected: 08/09/22 00:00
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 16:09

Client Sample ID: MW-86_080922

Lab Sample ID: 240-171402-2
Date Collected: 08/09/22 10:00
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 21:11
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/15/22 22:13

Client Sample ID: MW-86S_080922

Lab Sample ID: 240-171402-3
Date Collected: 08/09/22 11:20
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 21:35
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/15/22 22:39

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

1.7/2.4

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_64	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-86_080922	8/9/22	1000		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-86S_080922		1120		6						6					N	G	X	X	X	X	X	X	X	
MW-86S-MS_080922		1120		6						6					N	G	X	X	X	X	X	X	X	
MW-86S-MSD_080922	—	1120		6						6					N	G	X	X	X	X	X	X	X	—

240-171402 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: WADSWORTH ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/9/22 1535	NOT IN COLD STORAGE	ARCADIS	8/9/22 1535
Christina Weaver	ARCADIS	8/10/22 0935		FEDEX	8/10/22 0935
Jeri Hall	FEDEX	8/10/22 938	Received in Laboratory by:	FEDEX	8-11-22 930

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 177402
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-11-22 Opened on 8-11-22

Cooler unpacked by: Matt

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 (X) Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt (X) See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171402

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	1.7	2.4	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171402-1
Sample date: 2022-08-09
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171402-1

		Sample Name:	TRIP BLANK_64				MW-86_080922				MW-86S_080922			
		Lab Sample ID:	2401714021				2401714022				2401714023			
		Sample Date:	8/9/2022				8/9/2022				8/9/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

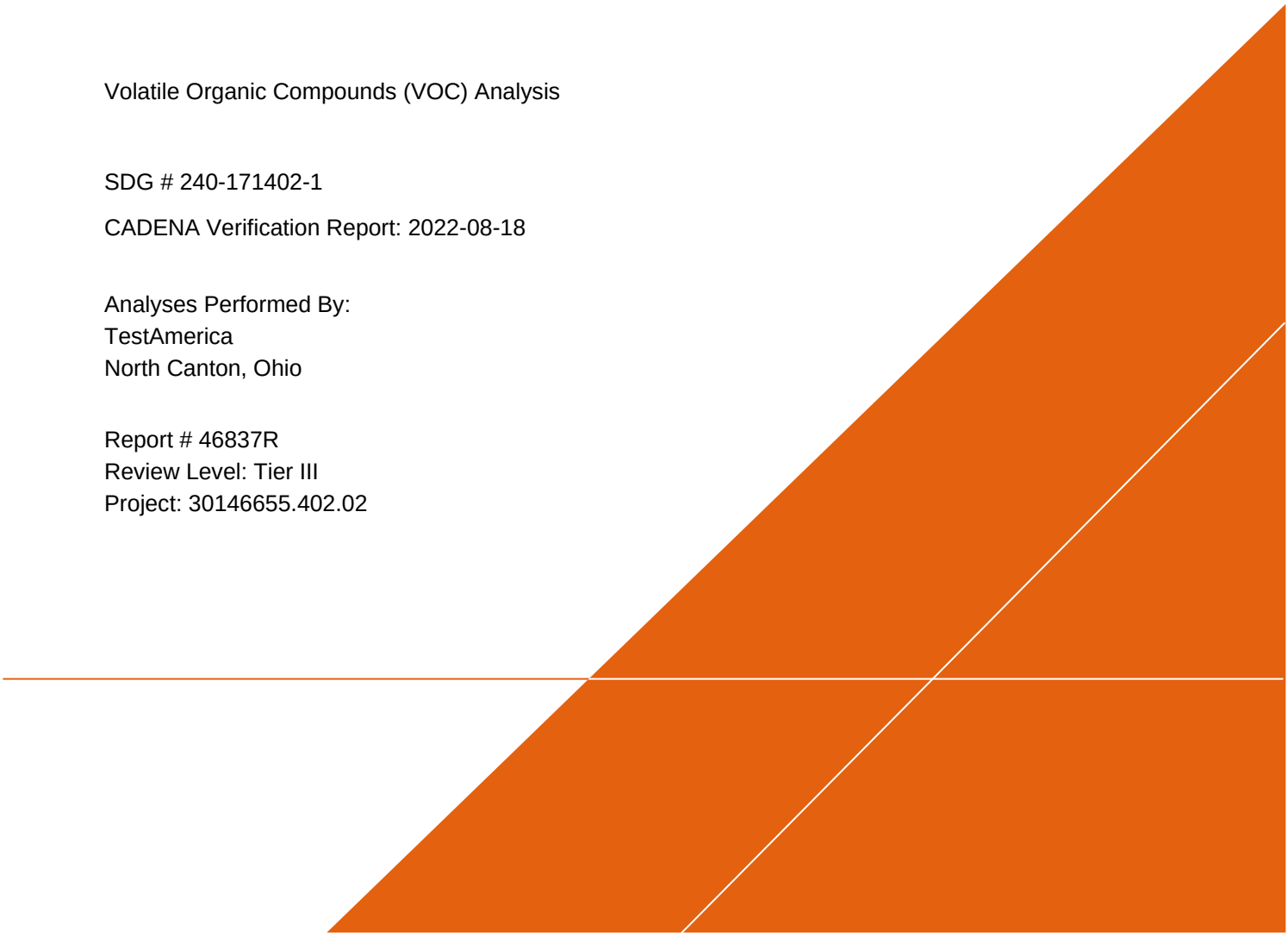
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171402-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46837R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171402-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_64	240-171402-1	Water	08/09/22		X	
MW-86_080922	240-171402-2	Water	08/09/22		X	X
MW-86S_080922	240-171402-3	Water	08/09/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

1.7/2.4

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_64	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-86_080922	8/9/22	1000		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-86S_080922	"	1120		6						6					N	G	X	X	X	X	X	X	X	
MW-86S-MS_080922	"	1120		6						6					N	G	X	X	X	X	X	X	X	
MW-86S-MSD_080922	—	1120		6						6					N	G	X	X	X	X	X	X	X	—

240-171402 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: WADSWORTH ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/9/22 1535	NOW IN COLD STORAGE	ARCADIS	8/9/22 1535
Christina Weaver	ARCADIS	8/10/22 0935		EEA	8/10/22 0935
Jei Hae	EEA	8/10/22 938		EENL	8-11-22 930

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: TRIP BLANK_64
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171402-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/12/22 16:09*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/12/22 16:09*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 16:09*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*08/12/22 16:09*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: MW-86_080922

Date Collected: 08/09/22 10:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171402-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 22:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/15/22 22:13*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 21:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 21:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 21:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 21:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/12/22 21:11*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 21:11*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 21:11*	*1*
Dibromofluoromethane (Surr)	*79*		*73 - 120*		*08/12/22 21:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171402-1

Client Sample ID: MW-86S_080922
Date Collected: 08/09/22 11:20
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171402-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 22:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 21:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 21:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 21:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 21:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 21:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/12/22 21:35*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/12/22 21:35*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/12/22 21:35*	*1*
Dibromofluoromethane (Surr)	*79*		*73 - 120*		*08/12/22 21:35*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171299-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 1:52:44 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171299-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171299-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 1:05 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
Method 8260D: Surrogate recovery for the following sample was outside the upper control limit: MW-87S_080822 (240-171299-3). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8260D: The following sample submitted for volatiles analysis was received with insufficient preservation (pH >2): MW-87S_080822 (240-171299-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171299-1	TRIP BLANK_69	Water	08/08/22 00:00	08/10/22 13:05
240-171299-2	MW-87_080822	Water	08/08/22 10:50	08/10/22 13:05
240-171299-3	MW-87S_080822	Water	08/08/22 12:15	08/10/22 13:05

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: TRIP BLANK_69 — Lab Sample ID: 240-171299-1

No Detections.

Client Sample ID: MW-87_080822 — Lab Sample ID: 240-171299-2

No Detections.

Client Sample ID: MW-87S_080822 — Lab Sample ID: 240-171299-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: TRIP BLANK_69
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:05

Lab Sample ID: 240-171299-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 17:03*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/11/22 17:03*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/11/22 17:03*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 17:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: MW-87_080822
Date Collected: 08/08/22 10:50
Date Received: 08/10/22 13:05

Lab Sample ID: 240-171299-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 03:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/13/22 03:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/11/22 17:27*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/11/22 17:27*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*08/11/22 17:27*	*1*
Dibromofluoromethane (Surr)	*119*		*73 - 120*		*08/11/22 17:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: MW-87S_080822

Date Collected: 08/08/22 12:15
Date Received: 08/10/22 13:05

Lab Sample ID: 240-171299-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 03:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/13/22 03:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*08/11/22 17:52*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/11/22 17:52*	*1*
Toluene-d8 (Surr)	*113*		*78 - 122*		*08/11/22 17:52*	*1*
Dibromofluoromethane (Surr)	*125*	*S1+*	*73 - 120*		*08/11/22 17:52*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171299-1	TRIP BLANK_69	110	101	106	116
240-171299-2	MW-87_080822	114	103	111	119
240-171299-3	MW-87S_080822	118	104	113	125 S1+
240-171299-3 MS	MW-87S-MS_080822	99	117	118	103
240-171299-3 MSD	MW-87S-MSD_080822	96	116	115	99
LCS 240-538478/5	Lab Control Sample	95	119	117	101
MB 240-538478/8	Method Blank	110	105	110	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171299-2	MW-87_080822	88
240-171299-3	MW-87S_080822	90
240-171299-3 MS	MW-87S-MS_080822	91
240-171299-3 MSD	MW-87S-MSD_080822	90
LCS 240-538760/3	Lab Control Sample	89
MB 240-538760/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538478/8
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 13:02*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 13:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 13:02*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 13:02*	*1*

Lab Sample ID: LCS 240-538478/5
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.8		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	21.8		ug/L		109	76 - 123
trans-1,2-Dichloroethene	20.0	20.5		ug/L		103	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*119*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-171299-3 MS
Matrix: Water
Analysis Batch: 538478

Client Sample ID: MW-87S-MS_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	17.1		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*117*		*56 - 136*
Toluene-d8 (Surr)	*118*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171299-3 MS
Matrix: Water
Analysis Batch: 538478

Client Sample ID: MW-87S-MS_080822
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171299-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: MW-87S-MSD_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538760/4
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/12/22 21:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/12/22 21:10*	*1*

Lab Sample ID: LCS 240-538760/3
Matrix: Water
Analysis Batch: 538760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.0		ug/L		100	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171299-3 MS
Matrix: Water
Analysis Batch: 538760

Client Sample ID: MW-87S-MS_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.99		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171299-3 MSD
Matrix: Water
Analysis Batch: 538760

Client Sample ID: MW-87S-MSD_080822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.83		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

GC/MS VOA

Analysis Batch: 538478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171299-1	TRIP BLANK_69	Total/NA	Water	8260D	
240-171299-2	MW-87_080822	Total/NA	Water	8260D	
240-171299-3	MW-87S_080822	Total/NA	Water	8260D	
MB 240-538478/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538478/5	Lab Control Sample	Total/NA	Water	8260D	
240-171299-3 MS	MW-87S-MS_080822	Total/NA	Water	8260D	
240-171299-3 MSD	MW-87S-MSD_080822	Total/NA	Water	8260D	

Analysis Batch: 538760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171299-2	MW-87_080822	Total/NA	Water	8260D SIM	
240-171299-3	MW-87S_080822	Total/NA	Water	8260D SIM	
MB 240-538760/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538760/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171299-3 MS	MW-87S-MS_080822	Total/NA	Water	8260D SIM	
240-171299-3 MSD	MW-87S-MSD_080822	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: TRIP BLANK_69

Lab Sample ID: 240-171299-1
Date Collected: 08/08/22 00:00
Matrix: Water
Date Received: 08/10/22 13:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 17:03

Client Sample ID: MW-87_080822

Lab Sample ID: 240-171299-2
Date Collected: 08/08/22 10:50
Matrix: Water
Date Received: 08/10/22 13:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 17:27
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 03:03

Client Sample ID: MW-87S_080822

Lab Sample ID: 240-171299-3
Date Collected: 08/08/22 12:15
Matrix: Water
Date Received: 08/10/22 13:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 17:52
Total/NA	Analysis	8260D SIM		1	538760	CS	EET CAN	08/13/22 03:29

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 69	8/8/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-87-080822	8/8/22	1050		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-87S-080822	"	1215		6						6					N	G	X	X	X	X	X	X	X	
MW-87S-MS-080822	"	1215		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-87S-MSD-080822	"	1215		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-171299 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Mon

Special Instructions/QC Requirements & Comments:

Sample Address: 34901 Standish St., Livonia, MI 48150

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/8/22 1425	NOVI COLD STORAGE	ARCADIS	8/8/22 1425
[signature]	Arcadis	8/9/22 1410	[signature]	EE TA	8/9/22 1411
[signature]	EE TA	8/9/22 1446	[signature]	eetk	8-10-22 930

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # T4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [N] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171299-1
Sample date: 2022-08-08
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC sample -003 surrogate recovery outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171299-1

		Sample Name:	TRIP BLANK_69				MW-87_080822				MW-87S_080822			
		Lab Sample ID:	2401712991				2401712992				2401712993			
		Sample Date:	8/8/2022				8/8/2022				8/8/2022			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

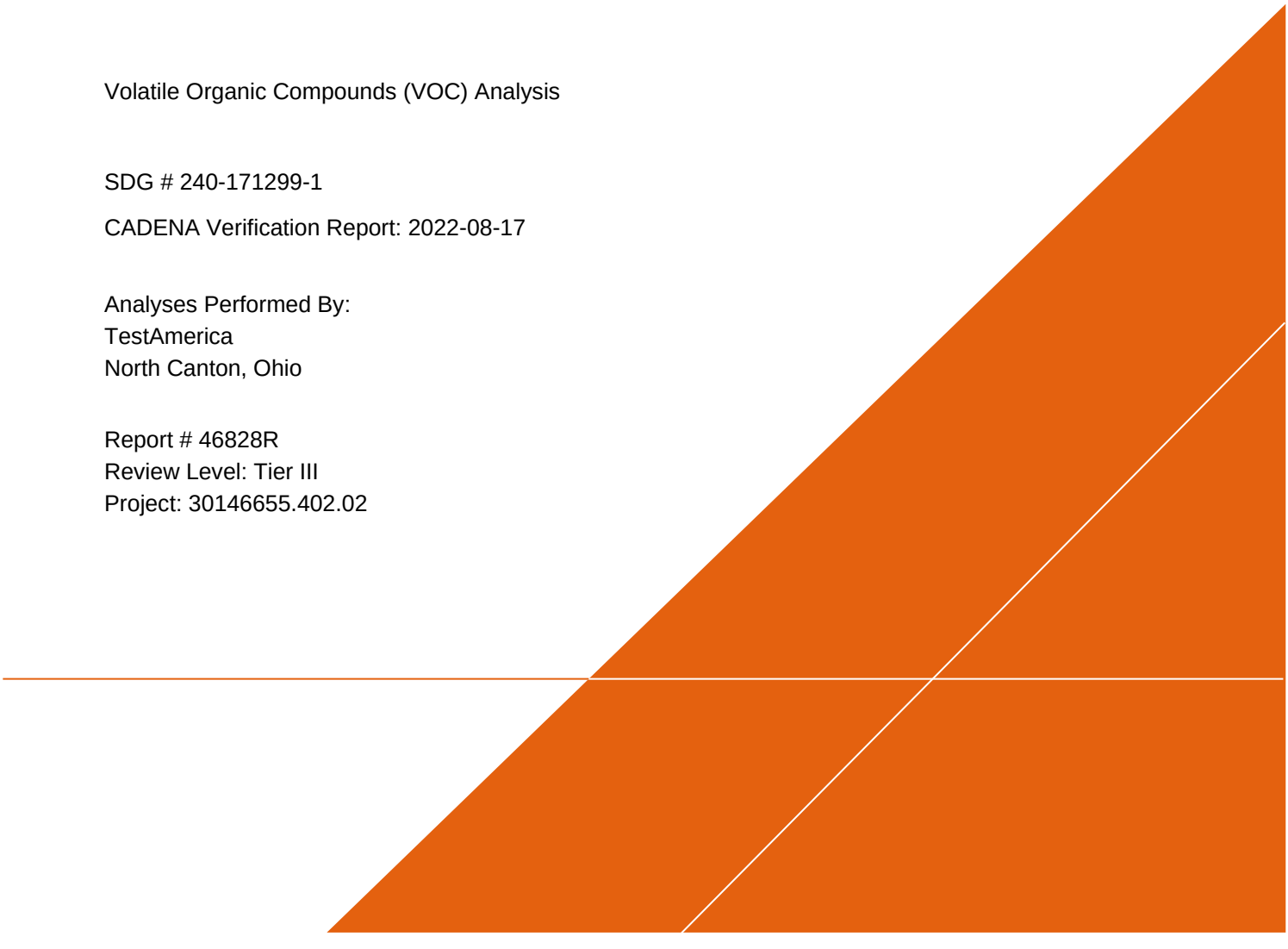
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171299-1

CADENA Verification Report: 2022-08-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46828R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171294-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_69	240-171299-1	Water	08/08/22		X	
MW-87_080822	240-171299-2	Water	08/08/22		X	X
MW-87S_080822	240-171299-3	Water	08/08/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis		Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 69	8/8/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-87-080822	8/8/22	1050		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-87S-080822		1215		6						6					N	G	X	X	X	X	X	X	X	
MW-87S-MS-080822		1215		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-87S-MSD-080822		1215		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-171299 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Mon

Special Instructions/QC Requirements & Comments:

Sample Address: 34901 Standish St., Livonia, MI 48150

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lenjamin Jay	ARCADIS	8/8/22 1425	NOVI COLD STORAGE	ARCADIS	8/8/22 1425
[signature]	Arcadis	8/9/22 1410	[signature]	EEGA	8/9/22 1411
[signature]	EEGA	8/9/22 1446	[signature]	eetk	8-10-22 930

Received in Laboratory By: [signature]

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8/17/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: TRIP BLANK_69
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 13:05

Lab Sample ID: 240-171299-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 17:03*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/11/22 17:03*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/11/22 17:03*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 17:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: MW-87_080822
Date Collected: 08/08/22 10:50
Date Received: 08/10/22 13:05

Lab Sample ID: 240-171299-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 03:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/13/22 03:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/11/22 17:27*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/11/22 17:27*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*08/11/22 17:27*	*1*
Dibromofluoromethane (Surr)	*119*		*73 - 120*		*08/11/22 17:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171299-1

Client Sample ID: MW-87S_080822

Date Collected: 08/08/22 12:15
Date Received: 08/10/22 13:05

Lab Sample ID: 240-171299-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/13/22 03:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/13/22 03:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*62 - 137*		*08/11/22 17:52*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/11/22 17:52*	*1*
Toluene-d8 (Surr)	*113*		*78 - 122*		*08/11/22 17:52*	*1*
Dibromofluoromethane (Surr)	*125*	*S1+*	*73 - 120*		*08/11/22 17:52*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171400-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/17/2022 3:36:02 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Job ID: 240-171400-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171400-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 3.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171400-1	TRIP BLANK_79	Water	08/09/22 00:00	08/11/22 09:30
240-171400-2	MW-96S_080922	Water	08/09/22 09:35	08/11/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Client Sample ID: TRIP BLANK_79 — Lab Sample ID: 240-171400-1

No Detections.

Client Sample ID: MW-96S_080922 — Lab Sample ID: 240-171400-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Client Sample ID: TRIP BLANK_79
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171400-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 15:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 15:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 15:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 15:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/12/22 15:44*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/12/22 15:44*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 15:44*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/12/22 15:44*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Client Sample ID: MW-96S_080922

Date Collected: 08/09/22 09:35
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171400-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 21:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/15/22 21:48*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/12/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 20:45*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/12/22 20:45*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*08/12/22 20:45*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171400-1	TRIP BLANK_79	93	93	95	83
240-171400-2	MW-96S_080922	89	94	94	80
240-171402-D-3 MS	Matrix Spike	88	95	95	83
240-171402-G-3 MSD	Matrix Spike Duplicate	89	98	97	81
LCS 240-538724/4	Lab Control Sample	90	97	96	85
MB 240-538724/6	Method Blank	95	94	97	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171400-2	MW-96S_080922	87
240-171402-H-3 MS	Matrix Spike	89
240-171402-M-3 MSD	Matrix Spike Duplicate	89
LCS 240-538971/3	Lab Control Sample	85
MB 240-538971/4	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538724/6
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 14:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 14:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 14:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 14:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/12/22 14:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 14:29*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/12/22 14:29*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 14:29*	*1*

Lab Sample ID: LCS 240-538724/4
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.6		ug/L		91	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	22.7		ug/L		91	70 - 122
Vinyl chloride	12.5	12.2		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	18.4		ug/L		74	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	56 - 136
Trichloroethene	1.0	U	25.0	19.5		ug/L		78	61 - 124
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Lab Sample ID: 240-171402-G-3 MSD
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	66 - 128	9	14
Tetrachloroethene	1.0	U	25.0	19.6		ug/L		78	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	8	15
Trichloroethene	1.0	U	25.0	20.8		ug/L		83	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538971/4
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 20:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/15/22 20:58*	*1*

Lab Sample ID: LCS 240-538971/3
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.74		ug/L		97	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171402-H-3 MS
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171402-M-3 MSD
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

GC/MS VOA

Analysis Batch: 538724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171400-1	TRIP BLANK_79	Total/NA	Water	8260D	
240-171400-2	MW-96S_080922	Total/NA	Water	8260D	
MB 240-538724/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538724/4	Lab Control Sample	Total/NA	Water	8260D	
240-171402-D-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171402-G-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171400-2	MW-96S_080922	Total/NA	Water	8260D SIM	
MB 240-538971/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538971/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171402-H-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171402-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Client Sample ID: TRIP BLANK_79

Lab Sample ID: 240-171400-1

Date Collected: 08/09/22 00:00

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 15:44

Client Sample ID: MW-96S_080922

Lab Sample ID: 240-171400-2

Date Collected: 08/09/22 09:35

Matrix: Water

Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 20:45
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/15/22 21:48

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:				
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:	
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783		
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		1 of 1 COCs	
Phone: 248-994-2240	Sampler Name: Sam Sykaris	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		For lab use only	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Walk-in client	
Project Number: 30080642.402.04	Shipping/Tracking No:			Lab sampling	
PO # 30080642.402.04				Job/SDG No:	

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 79	8/9/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-96S-080922	8/09/22	0935		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171400 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11850 Easton post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E20631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaris	Arcadis	8/09/22/1205	Arcadis Cold Stor.	Arcadis	08/09/22/1205
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/10/22 0935	Jeri Hall	EETA	8/10/22 0935
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/10/22 938		EENC	8-11-22 930

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Matt
Cooler Received on 8-11-22 Opened on 8-11-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other
Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes) No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	1.7	2.4	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171400-1
Sample date: 2022-08-09
Report received by CADENA: 2022-08-18
Initial Data Verification completed by CADENA: 2022-08-18
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171400-1

		Sample Name:	TRIP BLANK_79				MW-96S_080922			
		Lab Sample ID:	2401714001				2401714002			
		Sample Date:	8/9/2022				8/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

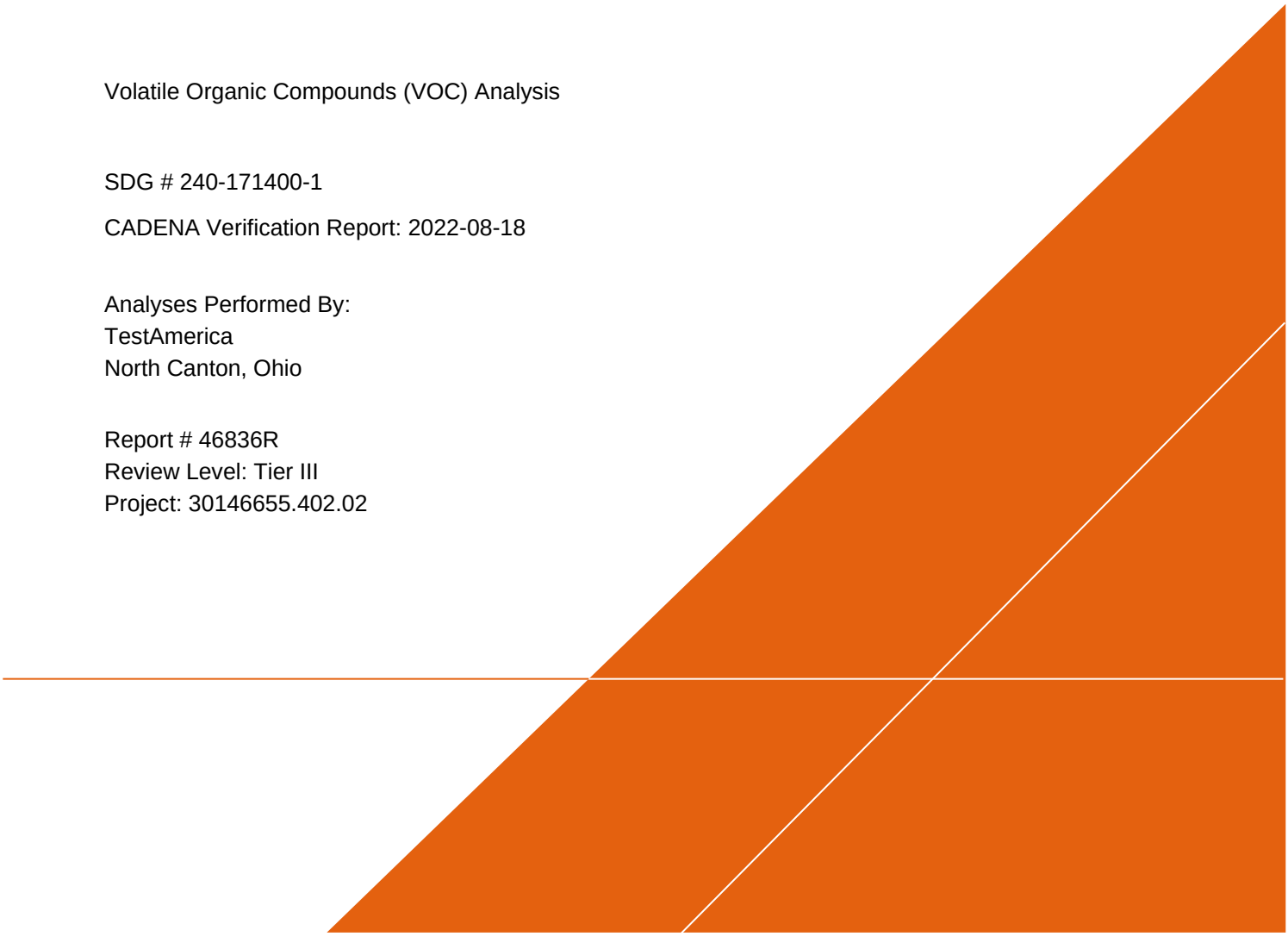
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171400-1

CADENA Verification Report: 2022-08-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46836R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #240-171400-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_79	240-171400-1	Water	08/09/22		X	
MW-96S_080922	240-171400-2	Water	08/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Prashanth K

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Client Sample ID: TRIP BLANK_79
Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171400-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 15:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 15:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 15:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 15:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 15:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/12/22 15:44*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/12/22 15:44*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/12/22 15:44*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/12/22 15:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171400-1

Client Sample ID: MW-96S_080922
Date Collected: 08/09/22 09:35
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171400-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 21:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/15/22 21:48*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 20:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/12/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 20:45*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/12/22 20:45*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*08/12/22 20:45*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171586-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 12:33:52 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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QC Association Summary 14
Lab Chronicle 15
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Job ID: 240-171586-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171586-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171586-1	TRIP BLANK_24	Water	08/10/22 00:00	08/16/22 09:00
240-171586-2	MW-100S_081022	Water	08/10/22 11:11	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Client Sample ID: TRIP BLANK_24 — Lab Sample ID: 240-171586-1

No Detections.

Client Sample ID: MW-100S_081022 — Lab Sample ID: 240-171586-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Client Sample ID: TRIP BLANK_24

Date Collected: 08/10/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171586-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 14:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 14:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 14:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 14:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 14:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 14:14*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/17/22 14:14*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/17/22 14:14*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/17/22 14:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Client Sample ID: MW-100S_081022
Date Collected: 08/10/22 11:11
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171586-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/20/22 23:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 18:00*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/17/22 18:00*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 18:00*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/17/22 18:00*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171526-D-11 MS	Matrix Spike	93	96	98	84
240-171526-I-11 MSD	Matrix Spike Duplicate	92	96	97	85
240-171586-1	TRIP BLANK_24	96	89	96	84
240-171586-2	MW-100S_081022	99	87	94	84
LCS 240-539235/4	Lab Control Sample	88	96	96	82
MB 240-539235/6	Method Blank	96	90	97	85

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
240-171586-2	MW-100S_081022	73
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539235/6
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 13:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 13:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 13:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 13:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 13:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 13:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 13:49*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/17/22 13:49*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/17/22 13:49*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/17/22 13:49*	*1*

Lab Sample ID: LCS 240-539235/4
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.7		ug/L		91	63 - 134
cis-1,2-Dichloroethene	25.0	21.7		ug/L		87	77 - 123
Tetrachloroethene	25.0	21.6		ug/L		87	76 - 123
trans-1,2-Dichloroethene	25.0	21.8		ug/L		87	75 - 124
Trichloroethene	25.0	20.7		ug/L		83	70 - 122
Vinyl chloride	12.5	11.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Lab Sample ID: 240-171526-D-11 MS
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	25.0	20.1		ug/L		80	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	19.8		ug/L		79	61 - 124
Vinyl chloride	1.0	U	12.5	11.9		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171526-I-11 MSD
Matrix: Water
Analysis Batch: 539235

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	22.0		ug/L		88	62 - 131	9	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136	6	15
Trichloroethene	1.0	U	25.0	21.5		ug/L		86	61 - 124	8	15
Vinyl chloride	1.0	U	12.5	12.1		ug/L		97	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.4		ug/L		104	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

GC/MS VOA

Analysis Batch: 539235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171586-1	TRIP BLANK_24	Total/NA	Water	8260D	
240-171586-2	MW-100S_081022	Total/NA	Water	8260D	
MB 240-539235/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539235/4	Lab Control Sample	Total/NA	Water	8260D	
240-171526-D-11 MS	Matrix Spike	Total/NA	Water	8260D	
240-171526-I-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171586-2	MW-100S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Client Sample ID: TRIP BLANK_24

Lab Sample ID: 240-171586-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 14:14

Client Sample ID: MW-100S_081022

Lab Sample ID: 240-171586-2

Date Collected: 08/10/22 11:11

Matrix: Water

Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539235	SAM	EET CAN	08/17/22 18:00
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 23:27

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171586-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_24	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1005_081022	08/10/22	11:11		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171586 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Commerical Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/12/22 1300	Novi Cold Storage	Arcadis	8/12/22 1300
	Arcadis	8/15/22 1005		EETA	8/15/22 10:00
	EETA	8/15/22 10:00	Received in Laboratory by:	EETNC	8-16-22 0502

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171586
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by:

Cooler Received on 8-16-22 Opened on 8-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Y)	N
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171586

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171586-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171586-1

		Sample Name:	TRIP BLANK_24				MW-100S_081022			
		Lab Sample ID:	2401715861				2401715862			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

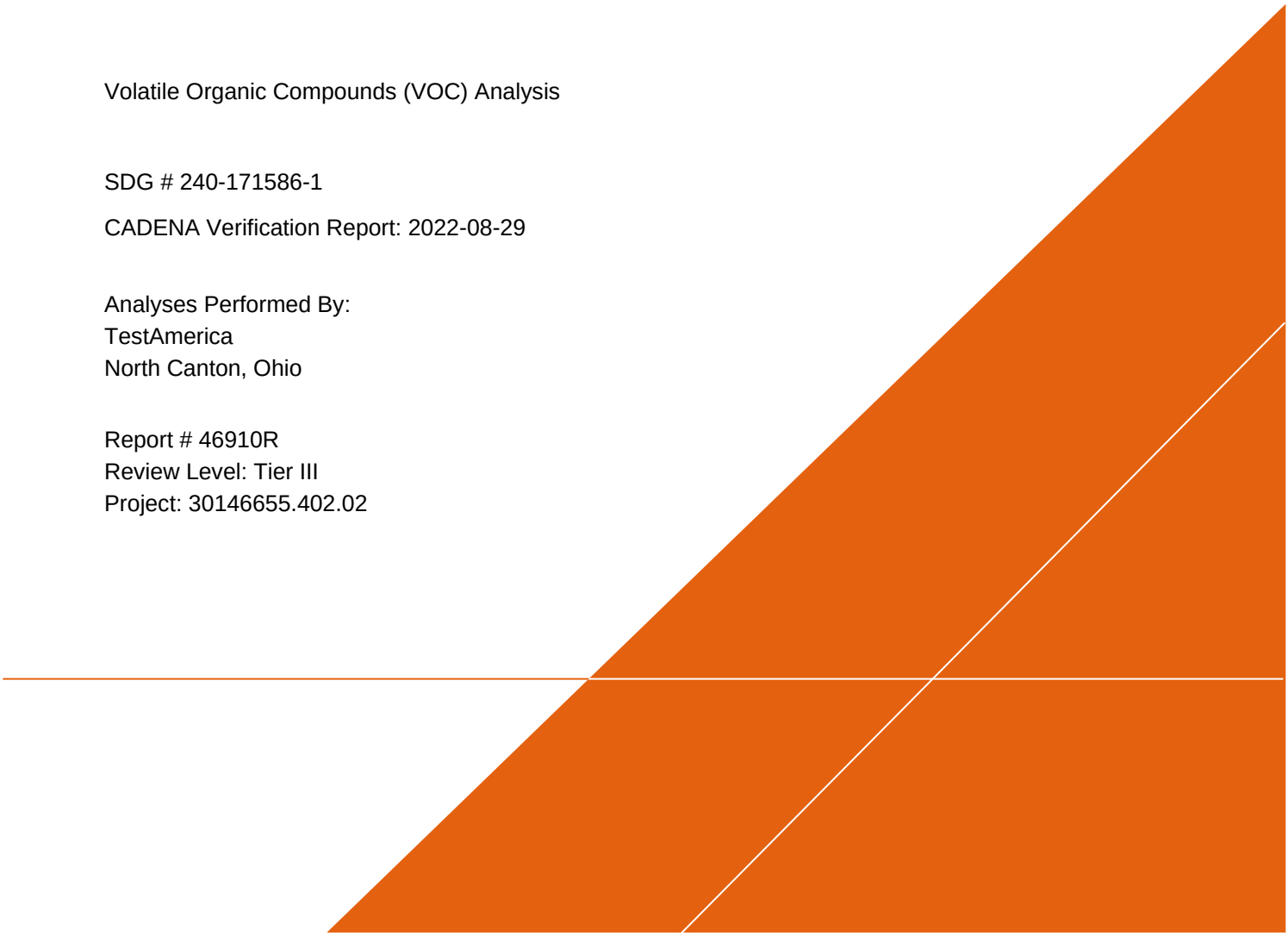
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171586-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46910R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171586-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_24	240-171586-1	Water	08/10/22		X	
MW-100S_081022	240-171586-2	Water	08/10/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_24	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1005_081022	08/10/22	11:11		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171586 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Commerical Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/12/22 1300	Novi Cold Storage	Arcadis	8/12/22 1300
	Arcadis	8/15/22 1005		EETA	8/15/22 10:10
	EETA	8/15/22 10:10		EETNC	8-16-22 0900

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Client Sample ID: TRIP BLANK_24
Lab Sample ID: 240-171586-1
Date Collected: 08/10/22 00:00
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 14:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 14:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 14:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 14:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 14:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/17/22 14:14*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/17/22 14:14*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/17/22 14:14*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/17/22 14:14*	*1*

Client Sample ID: MW-100S_081022
Lab Sample ID: 240-171586-2
Date Collected: 08/10/22 11:11
Matrix: Water
Date Received: 08/16/22 09:00

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/20/22 23:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/17/22 18:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/17/22 18:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/17/22 18:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/17/22 18:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/17/22 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/17/22 18:00*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/17/22 18:00*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/17/22 18:00*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/17/22 18:00*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171641-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:09:27 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171641-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171641-1

Comments
No additional comments.

Receipt
The samples were received on 8/17/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171641-1	TRIP BLANK_130	Water	08/15/22 00:00	08/17/22 09:30
240-171641-2	MW-229D_081522	Water	08/15/22 10:00	08/17/22 09:30
240-171641-3	MW-229_081522	Water	08/15/22 11:00	08/17/22 09:30
240-171641-4	MW-229S_081522	Water	08/15/22 12:00	08/17/22 09:30
240-171641-5	MW-101S_081522	Water	08/15/22 13:15	08/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Client Sample ID: TRIP BLANK_130 — Lab Sample ID: 240-171641-1

No Detections.

Client Sample ID: MW-229D_081522 — Lab Sample ID: 240-171641-2

No Detections.

Client Sample ID: MW-229_081522 — Lab Sample ID: 240-171641-3

No Detections.

Client Sample ID: MW-229S_081522 — Lab Sample ID: 240-171641-4

No Detections.

Client Sample ID: MW-101S_081522 — Lab Sample ID: 240-171641-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Client Sample ID: TRIP BLANK_130

Date Collected: 08/15/22 00:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171641-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 13:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 13:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 13:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 13:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/18/22 13:30*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/18/22 13:30*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/18/22 13:30*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/18/22 13:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Client Sample ID: MW-229D_081522
Date Collected: 08/15/22 10:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171641-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 23:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/22/22 23:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 14:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 14:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 14:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 14:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/18/22 14:45*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/18/22 14:45*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/18/22 14:45*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 14:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Client Sample ID: MW-229_081522

Date Collected: 08/15/22 11:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171641-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 01:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/23/22 01:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 15:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 15:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 15:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 15:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/18/22 15:10*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/18/22 15:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/18/22 15:10*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 15:10*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Client Sample ID: MW-229S_081522
Date Collected: 08/15/22 12:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171641-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 01:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/23/22 01:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 15:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 15:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 15:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/18/22 15:36*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/18/22 15:36*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/18/22 15:36*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/18/22 15:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Client Sample ID: MW-101S_081522
Date Collected: 08/15/22 13:15
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171641-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 01:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/23/22 01:50*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/18/22 16:01*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/18/22 16:01*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/18/22 16:01*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/18/22 16:01*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171641-1	TRIP BLANK_130	101	90	97	86
240-171641-2	MW-229D_081522	102	88	96	87
240-171641-2 MS	MW-229D-MS_081522	94	96	98	85
240-171641-2 MSD	MW-229D-MSD_081522	95	96	98	87
240-171641-3	MW-229_081522	104	86	97	87
240-171641-4	MW-229S_081522	103	87	97	89
240-171641-5	MW-101S_081522	102	85	96	90
LCS 240-539383/4	Lab Control Sample	95	98	102	88
MB 240-539383/6	Method Blank	100	86	96	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171641-2	MW-229D_081522	71
240-171641-2 MS	MW-229D-MS_081522	72
240-171641-2 MSD	MW-229D-MSD_081522	70
240-171641-3	MW-229_081522	72
240-171641-4	MW-229S_081522	73
240-171641-5	MW-101S_081522	74
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539383/6
Matrix: Water
Analysis Batch: 539383

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 13:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 13:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 13:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 13:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/18/22 13:04*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/18/22 13:04*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/18/22 13:04*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/18/22 13:04*	*1*

Lab Sample ID: LCS 240-539383/4
Matrix: Water
Analysis Batch: 539383

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	22.8		ug/L		91	77 - 123
Tetrachloroethene	25.0	22.3		ug/L		89	76 - 123
trans-1,2-Dichloroethene	25.0	22.7		ug/L		91	75 - 124
Trichloroethene	25.0	20.9		ug/L		83	70 - 122
Vinyl chloride	12.5	11.8		ug/L		95	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171641-2 MS
Matrix: Water
Analysis Batch: 539383

Client Sample ID: MW-229D-MS_081522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	1.0	U	12.5	11.0		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171641-2 MS
Matrix: Water
Analysis Batch: 539383

Client Sample ID: MW-229D-MS_081522
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	85		73 - 120

Lab Sample ID: 240-171641-2 MSD
Matrix: Water
Analysis Batch: 539383

Client Sample ID: MW-229D-MSD_081522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	21.0		ug/L		84	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	56 - 136	3	15
Trichloroethene	1.0	U	25.0	20.7		ug/L		83	61 - 124	6	15
Vinyl chloride	1.0	U	12.5	11.7		ug/L		93	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	96		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	87		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	68		66 - 120		08/22/22 17:51	1

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		66 - 120

Lab Sample ID: 240-171641-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: MW-229D-MS_081522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: MW-229D-MSD_081522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

GC/MS VOA

Analysis Batch: 539383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171641-1	TRIP BLANK_130	Total/NA	Water	8260D	
240-171641-2	MW-229D_081522	Total/NA	Water	8260D	
240-171641-3	MW-229_081522	Total/NA	Water	8260D	
240-171641-4	MW-229S_081522	Total/NA	Water	8260D	
240-171641-5	MW-101S_081522	Total/NA	Water	8260D	
MB 240-539383/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539383/4	Lab Control Sample	Total/NA	Water	8260D	
240-171641-2 MS	MW-229D-MS_081522	Total/NA	Water	8260D	
240-171641-2 MSD	MW-229D-MSD_081522	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171641-2	MW-229D_081522	Total/NA	Water	8260D SIM	
240-171641-3	MW-229_081522	Total/NA	Water	8260D SIM	
240-171641-4	MW-229S_081522	Total/NA	Water	8260D SIM	
240-171641-5	MW-101S_081522	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-2 MS	MW-229D-MS_081522	Total/NA	Water	8260D SIM	
240-171641-2 MSD	MW-229D-MSD_081522	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Client Sample ID: TRIP BLANK_130
Lab Sample ID: 240-171641-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 13:30

Client Sample ID: MW-229D_081522
Lab Sample ID: 240-171641-2
Date Collected: 08/15/22 10:00
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 14:45
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 23:52

Client Sample ID: MW-229_081522
Lab Sample ID: 240-171641-3
Date Collected: 08/15/22 11:00
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 15:10
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/23/22 01:03

Client Sample ID: MW-229S_081522
Lab Sample ID: 240-171641-4
Date Collected: 08/15/22 12:00
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 15:36
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/23/22 01:27

Client Sample ID: MW-101S_081522
Lab Sample ID: 240-171641-5
Date Collected: 08/15/22 13:15
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 16:01
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/23/22 01:50

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171641-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_130	8/15/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-229D-081522	08/15/22	1000		5						5					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-229D-MS_081522	08/15/22	1000		6						6					N	G	X	X	X	X	X	X	X	
MW-229D-MSD_081522	08/15/22	1000		6						6					N	G	X	X	X	X	X	X	X	
MW-229_081522	08/15/22	1100		6						6					N	G	X	X	X	X	X	X	X	
MW-229s_081522	08/15/22	1200		5						5					N	G	X	X	X	X	X	X	X	
MW-101s_081522	08/15/22	1315		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: 35416 Leon st front lawn and Belden Ct (MW-101s)

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

240-171641 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/15/22/1420	Arcadis Cold Storage	Arcadis	08/15/22/1420
Christina Weaver	Arcadis	8/16/22 1116		EE TA	8/16/22 17:15
	EE TA	8/16/22 11:20	Received in Laboratory by: Tammy Porge	EE TNC	8-17-22 930

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171641
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-17-22 Opened on 8-17-22

Cooler unpacked by: Nancy Boyer

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # A ~~Foam~~ Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.1 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171641-1
Sample date: 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171641-1

		Sample Name:	TRIP BLANK_130				MW-229D_081522				MW-229_081522				MW-229S_081522				MW-101S_081522			
		Lab Sample ID:	2401716411				2401716412				2401716413				2401716414				2401716415			
		Sample Date:	8/15/2022				8/15/2022				8/15/2022				8/15/2022				8/15/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
OSW-8260D																						
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																						
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

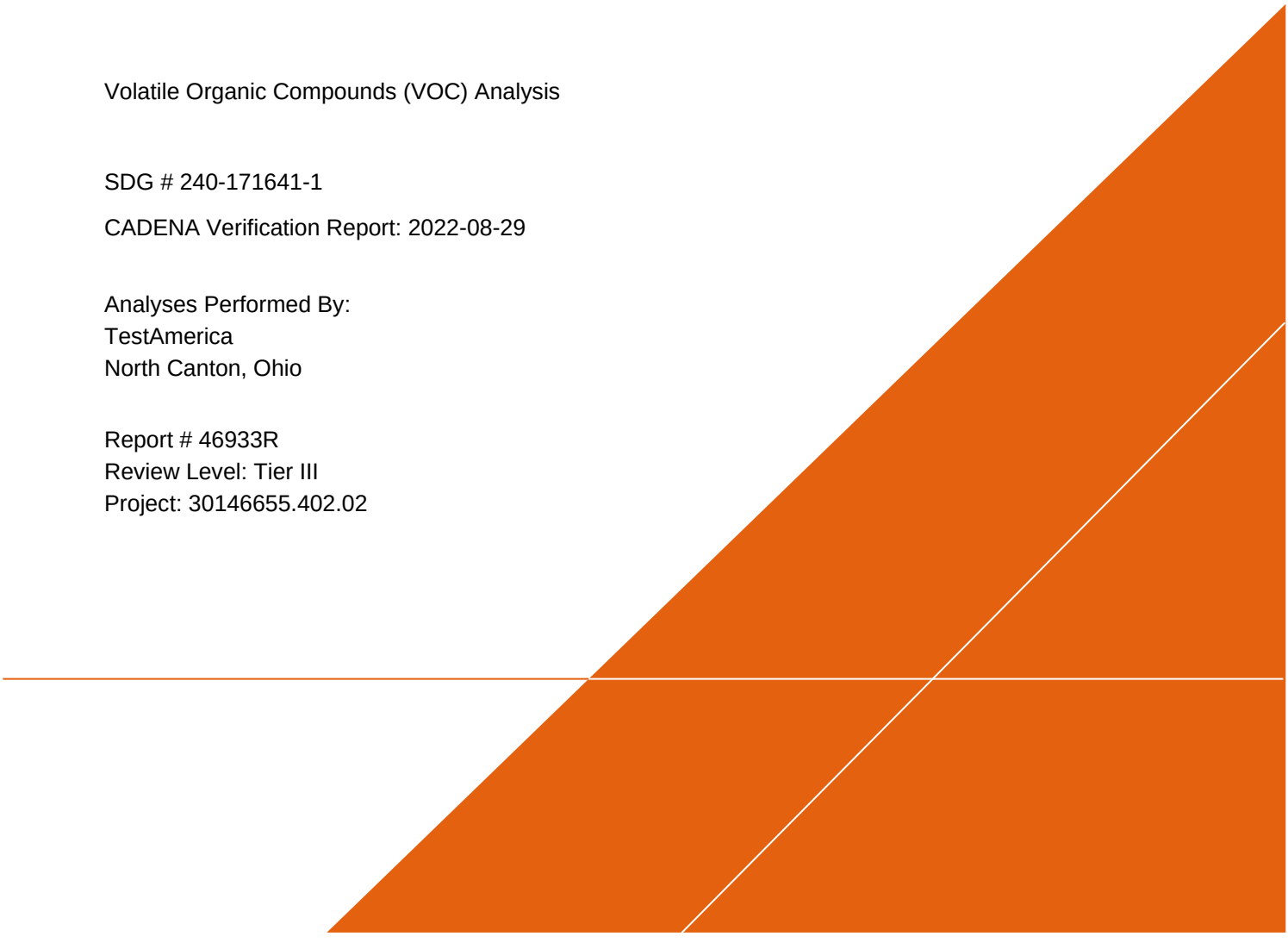
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171641-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46933R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171641-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_130	240-171641-1	Water	08/15/22		X	
MW-229D_081522	240-171641-2	Water	08/15/22		X	X
MW-229_081522	240-171641-3	Water	08/15/22		X	X
MW-229S_081522	240-171641-4	Water	08/15/22		X	X
MW-101S_081522	240-171641-5	Water	08/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

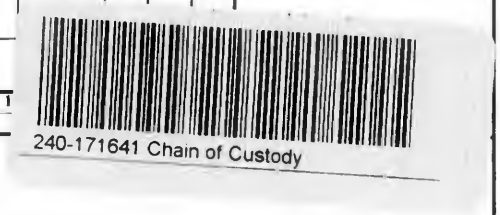
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_130	8/15/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-229D_081522	08/15/22	1000		5						5					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-229D-MS_081522	08/15/22	1000		6						6					N	G	X	X	X	X	X	X	X	
MW-229D-MSD_081522	08/15/22	1000		6						6					N	G	X	X	X	X	X	X	X	
MW-229_081522	08/15/22	1100		6						6					N	G	X	X	X	X	X	X	X	
MW-229s_081522	08/15/22	1200		5						5					N	G	X	X	X	X	X	X	X	
MW-101s_081522	08/15/22	1315		6						6					N	G	X	X	X	X	X	X	X	

Page 396 of 387



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: 35416 Leon st front lawn and Belden Ct (MW-101s)

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/15/22/1420	Arcadis Cold Storage	Arcadis	08/15/22/1420
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/16/22 1116	[signature]	EE TA	8/16/22 11:15
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EE TA	8/16/22 11:20	[signature] Penya	EETNC	8-17-22 930

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Client Sample ID: TRIP BLANK_130
Lab Sample ID: 240-171641-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 13:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 13:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 13:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 13:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/18/22 13:30*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/18/22 13:30*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/18/22 13:30*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/18/22 13:30*	*1*

Client Sample ID: MW-229D_081522
Lab Sample ID: 240-171641-2
Date Collected: 08/15/22 10:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 23:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/22/22 23:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 14:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 14:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 14:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 14:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/18/22 14:45*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/18/22 14:45*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/18/22 14:45*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 14:45*	*1*

Client Sample ID: MW-229_081522
Lab Sample ID: 240-171641-3
Date Collected: 08/15/22 11:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 01:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/23/22 01:03*	*1*

Client Sample ID: MW-229_081522

Lab Sample ID: 240-171641-3

Date Collected: 08/15/22 11:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 15:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 15:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 15:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 15:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/18/22 15:10*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/18/22 15:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/18/22 15:10*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 15:10*	*1*

Client Sample ID: MW-229S_081522

Lab Sample ID: 240-171641-4

Date Collected: 08/15/22 12:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 01:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/23/22 01:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 15:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 15:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 15:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 15:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/18/22 15:36*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/18/22 15:36*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/18/22 15:36*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/18/22 15:36*	*1*

Client Sample ID: MW-101S_081522

Lab Sample ID: 240-171641-5

Date Collected: 08/15/22 13:15
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 01:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/23/22 01:50*	*1*

Client Sample ID: MW-101S_081522
Lab Sample ID: 240-171641-5

Date Collected: 08/15/22 13:15
Matrix: Water

Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/18/22 16:01*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/18/22 16:01*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/18/22 16:01*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*08/18/22 16:01*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171816-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 8:46:29 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Job ID: 240-171816-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171816-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171816-1	TRIP BLANK_05	Water	08/17/22 00:00	08/19/22 09:50
240-171816-2	MW-106S_081722	Water	08/17/22 11:10	08/19/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Client Sample ID: TRIP BLANK_05 — Lab Sample ID: 240-171816-1

No Detections.

Client Sample ID: MW-106S_081722 — Lab Sample ID: 240-171816-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Client Sample ID: TRIP BLANK_05
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171816-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 14:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 14:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 14:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 14:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 14:09*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 14:09*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 14:09*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/22/22 14:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Client Sample ID: MW-106S_081722
Date Collected: 08/17/22 11:10
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171816-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 23:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/24/22 23:08*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 14:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 14:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 14:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 14:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/22/22 14:34*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 14:34*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 14:34*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/22/22 14:34*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171816-1	TRIP BLANK_05	88	95	94	85
240-171816-2	MW-106S_081722	87	94	95	85
240-171821-E-4 MSD	Matrix Spike Duplicate	85	93	95	86
240-171821-H-4 MS	Matrix Spike	88	91	96	88
LCS 240-539643/5	Lab Control Sample	86	92	97	86
MB 240-539643/8	Method Blank	89	95	95	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171816-2	MW-106S_081722	87
240-171821-I-4 MS	Matrix Spike	86
240-171821-M-4 MSD	Matrix Spike Duplicate	88
LCS 240-540081/3	Lab Control Sample	91
MB 240-540081/4	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539643/8
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 12:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 12:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 12:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 12:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 12:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 12:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 12:29*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 12:29*	*1*

Lab Sample ID: LCS 240-539643/5
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.0		ug/L		85	77 - 123
Tetrachloroethene	20.0	19.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	17.5		ug/L		88	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	18.3		ug/L		91	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-H-4 MS
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.8		ug/L		84	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*08/24/22 18:05*	*1*

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171821-I-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-M-4 MSD
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

GC/MS VOA

Analysis Batch: 539643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171816-1	TRIP BLANK_05	Total/NA	Water	8260D	
240-171816-2	MW-106S_081722	Total/NA	Water	8260D	
MB 240-539643/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539643/5	Lab Control Sample	Total/NA	Water	8260D	
240-171821-E-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171821-H-4 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171816-2	MW-106S_081722	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171821-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Client Sample ID: TRIP BLANK_05

Lab Sample ID: 240-171816-1

Date Collected: 08/17/22 00:00

Matrix: Water

Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 14:09

Client Sample ID: MW-106S_081722

Lab Sample ID: 240-171816-2

Date Collected: 08/17/22 11:10

Matrix: Water

Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 14:34
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/24/22 23:08

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171816-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

4.1/4.8

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_05	8/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-106_081722	8/17/22	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171816 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Beech ST ROW 12001 Stark

Submit all results through Cadena at jtomaine@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/17/22/1340	Arcadis Cold Stor	Arcadis	08/17/22/1340
Christina Weaver	Arcadis	8/17/22 950	Gina Riviera	ETA	8-18-22 9:50
Gina Riviera	ETA	8-18-22 1700	Received in Laboratory by:	ETA	8-19-22 9:50

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Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171816**
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-19-22 Opened on 8-19-22

Cooler unpacked by: Charlie K

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam ~~Plastic Bag~~ None Other

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.8 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity ____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covid	Yes	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

September 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171816-1
Sample date: 2022-08-17
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171816-1

		Sample Name:	TRIP BLANK_05				MW-106S_081722			
		Lab Sample ID:	2401718161				2401718162			
		Sample Date:	8/17/2022				8/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

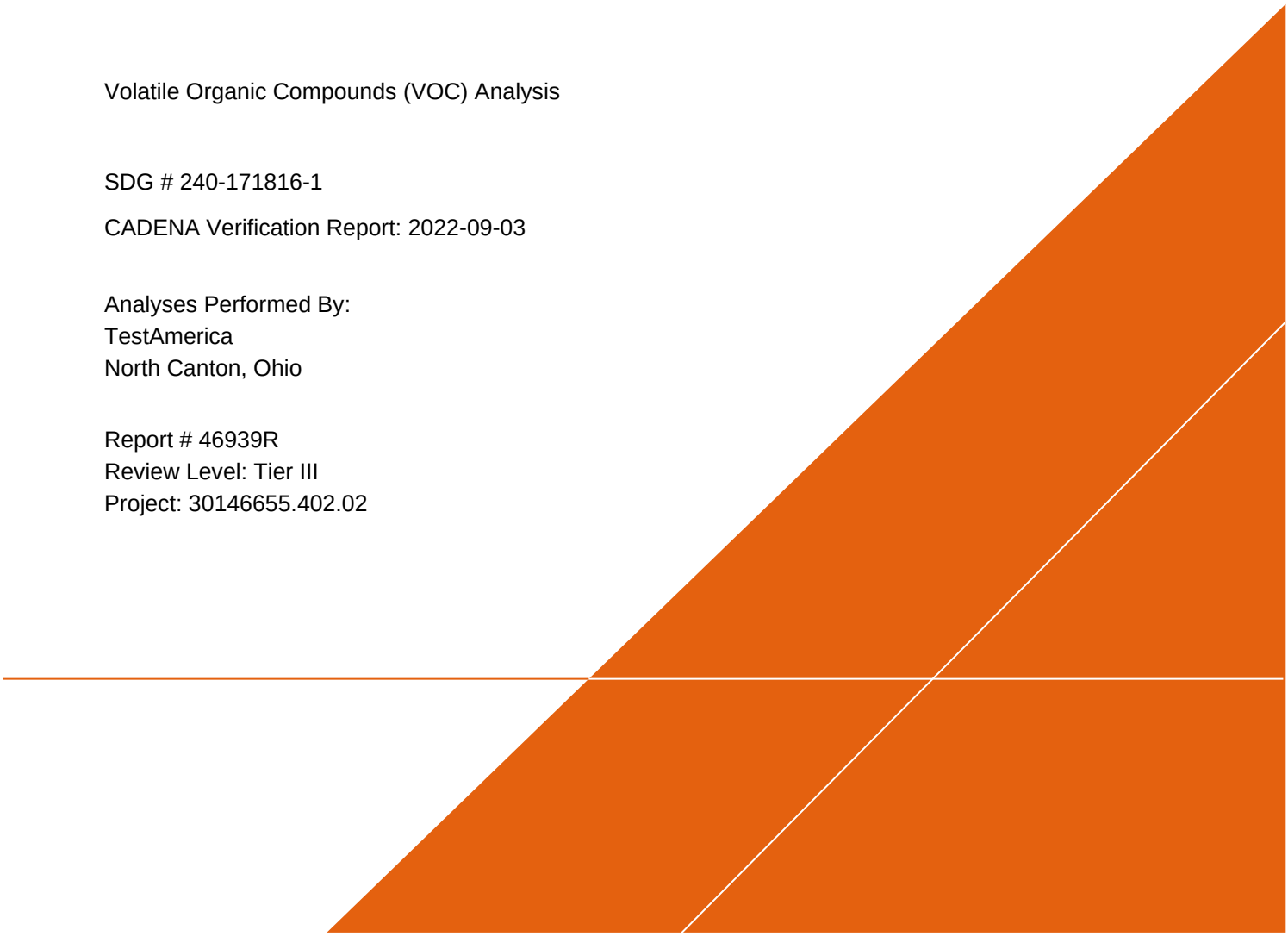
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171816-1

CADENA Verification Report: 2022-09-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46939R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171816-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_05	240-171816-1	Water	08/17/22		X	
MW-106S_081722	240-171816-2	Water	08/17/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

4.1/4.8

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_05	8/17/22	—		2						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-106_081722	8/17/22	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171816 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Beech ST ROW 12001 Stark

Submit all results through Cadena at jtomaine@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/17/22/1340	Arcadis cold stor	Arcadis	08/17/22/1340
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sti Ulerm	Arcadis	8/17/22 950	Gina Rivera	ETA	8-18-22 9:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Gina Rivera	ETA	8-18-22 1700		ETA	8-19-22 9:50

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09/02/2022

Client Sample ID: TRIP BLANK_05
Lab Sample ID: 240-171816-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 14:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 14:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 14:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 14:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 14:09*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 14:09*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 14:09*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/22/22 14:09*	*1*

Client Sample ID: MW-106S_081722
Lab Sample ID: 240-171816-2
Date Collected: 08/17/22 11:10
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 23:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/24/22 23:08*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 14:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 14:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 14:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 14:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 14:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*08/22/22 14:34*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 14:34*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 14:34*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/22/22 14:34*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171517-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:05:51 AM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Job ID: 240-171517-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171517-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171517-1	TRIP BLANK_80	Water	08/10/22 00:00	08/13/22 09:45
240-171517-2	MW-107S_081022	Water	08/10/22 12:55	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Client Sample ID: TRIP BLANK_80 — Lab Sample ID: 240-171517-1

No Detections.

Client Sample ID: MW-107S_081022 — Lab Sample ID: 240-171517-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Client Sample ID: TRIP BLANK_80
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171517-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 14:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 14:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 14:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/16/22 14:07*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/16/22 14:07*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/16/22 14:07*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/16/22 14:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Client Sample ID: MW-107S_081022
Date Collected: 08/10/22 12:55
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171517-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*08/20/22 17:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 16:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 16:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 16:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/16/22 16:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/16/22 16:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/16/22 16:12*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/16/22 16:12*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171517-1	TRIP BLANK_80	97	89	94	82
240-171517-2	MW-107S_081022	95	88	94	86
240-171520-F-3 MS	Matrix Spike	91	97	96	85
240-171520-O-3 MSD	Matrix Spike Duplicate	90	96	98	83
LCS 240-539087/4	Lab Control Sample	89	97	97	85
MB 240-539087/6	Method Blank	93	88	92	83

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171517-2	MW-107S_081022	76
240-171520-G-3 MS	Matrix Spike	75
240-171520-N-3 MSD	Matrix Spike Duplicate	70
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539087/6
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 13:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 13:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 13:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 13:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 13:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 13:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/16/22 13:42*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/16/22 13:42*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/16/22 13:42*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/16/22 13:42*	*1*

Lab Sample ID: LCS 240-539087/4
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.1		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	24.2		ug/L		97	77 - 123
Tetrachloroethene	25.0	23.3		ug/L		93	76 - 123
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	11.1		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171520-F-3 MS
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.1		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	1.0	U	12.5	11.9		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171520-F-3 MS
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171520-O-3 MSD
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	25.0	21.1		ug/L		84	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	12.3		ug/L		98	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-G-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-N-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

GC/MS VOA

Analysis Batch: 539087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171517-1	TRIP BLANK_80	Total/NA	Water	8260D	
240-171517-2	MW-107S_081022	Total/NA	Water	8260D	
MB 240-539087/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539087/4	Lab Control Sample	Total/NA	Water	8260D	
240-171520-F-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171520-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171517-2	MW-107S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171520-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Client Sample ID: TRIP BLANK_80

Lab Sample ID: 240-171517-1

Date Collected: 08/10/22 00:00

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539087	SAM	EET CAN	08/16/22 14:07

Client Sample ID: MW-107S_081022

Lab Sample ID: 240-171517-2

Date Collected: 08/10/22 12:55

Matrix: Water

Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539087	SAM	EET CAN	08/16/22 16:12
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 17:06

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hindle	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 80	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-107S_081022	8/10/22	1255		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171517 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12125 Capitol ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindle	Arcadis	8/10/22 16:00	NDVI cold storage	Arcadis	8/10/22 16:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Stephanie	Arcadis	8/12/22 955	Jeri Hall	EETA	8/12/22 956
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/12/22 958		EETNC	8-13-22 0845

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171517
Barberton Facility

Client Arcadis Site Name Livonia

Cooler Received on 8-13-22 Opened on 8-13-22

Cooler unpacked by: (me)

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	(Yes)	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.	(me)	8-13-22
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171517-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171517-1

		Sample Name:	TRIP BLANK_80				MW-107S_081022			
		Lab Sample ID:	2401715171				2401715172			
		Sample Date:	8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

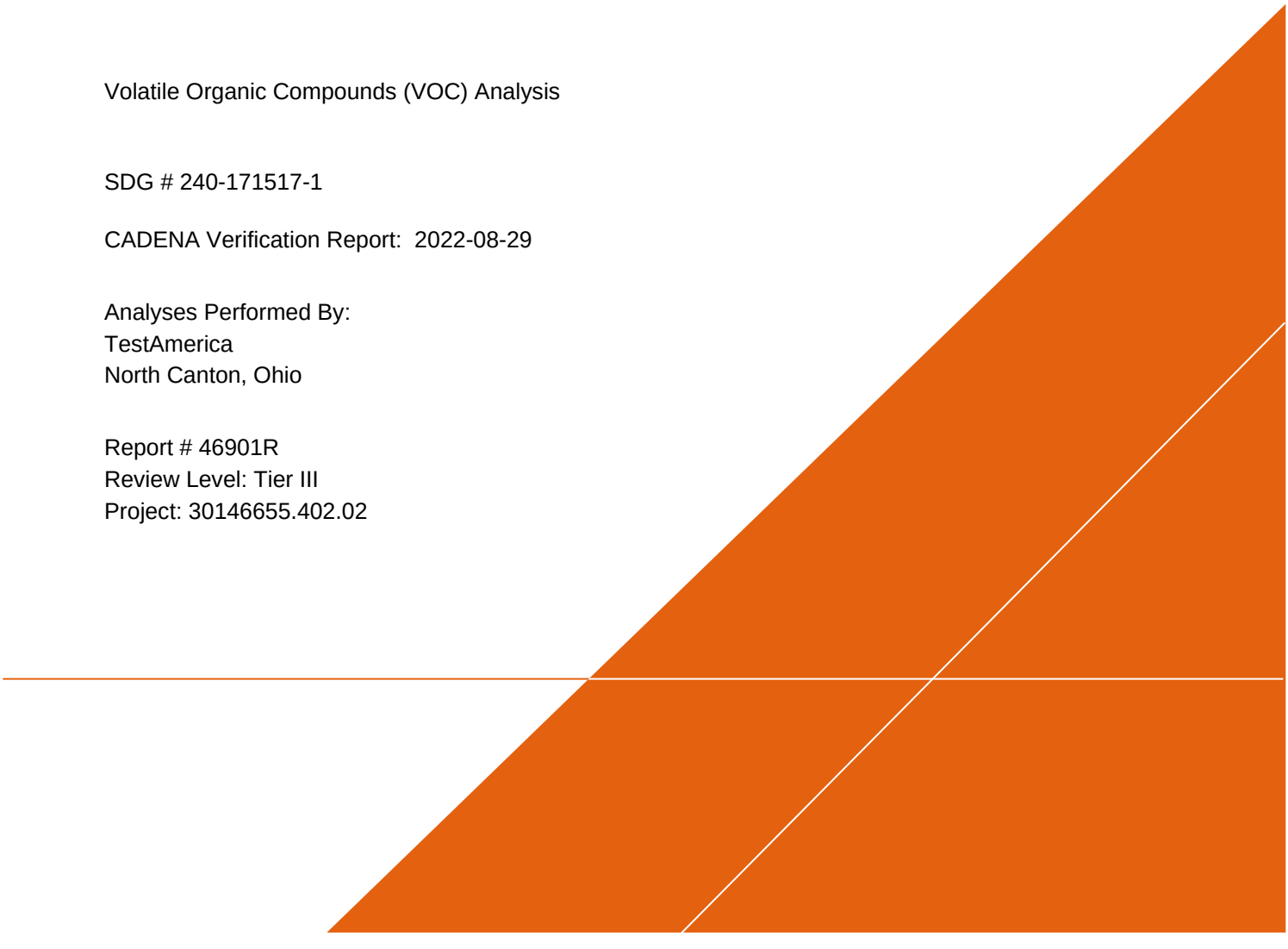
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171517-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46901R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171517-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_80	240-171517-1	Water	08/10/22		X	
MW-107S_081022	240-171517-2	Water	08/10/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 26, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Samantha Hinkle	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 80	8/10/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-107S_081022	8/10/22	1255		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171517 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12125 Capitol ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Samantha Hinkle	Arcadis	8/10/22 16:00	Received by: NDVI cold storage	Arcadis	8/10/22 16:00
Relinquished by: Stephanie	Arcadis	8/12/22 955	Received by: Jeri Hall	EETA	8/12/22 956
Relinquished by: Jeri Hall	EETA	8/12/22 958	Received in Laboratory by:	EETNC	8-13-22 0845

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Client Sample ID: TRIP BLANK_80
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171517-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 14:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 14:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 14:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/16/22 14:07*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/16/22 14:07*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/16/22 14:07*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/16/22 14:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171517-1

Client Sample ID: MW-107S_081022
Date Collected: 08/10/22 12:55
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171517-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*08/20/22 17:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 16:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 16:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 16:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 16:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/16/22 16:12*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/16/22 16:12*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/16/22 16:12*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/16/22 16:12*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171520-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 11:12:06 AM
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171520-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171520-1

Comments
No additional comments.

Receipt
The samples were received on 8/13/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method 8260D SIM: The following samples were collected in a properly preserved vial; however, the pH was outside the required criteria when verified by the laboratory. The samples were analyzed outside the 7-day holding time specified for unpreserved samples but within the 14-day holding time specified for preserved samples: MW-142S-MS_081022 (240-171520-3[MS]) and MW-142S-MSD_081022 (240-171520-3[MSD]).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171520-1	TRIP BLANK_105	Water	08/10/22 00:00	08/13/22 09:45
240-171520-2	MW-108S_081022	Water	08/10/22 12:20	08/13/22 09:45
240-171520-3	MW-142S_081022	Water	08/10/22 13:40	08/13/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: TRIP BLANK_105 — Lab Sample ID: 240-171520-1

No Detections.

Client Sample ID: MW-108S_081022 — Lab Sample ID: 240-171520-2

No Detections.

Client Sample ID: MW-142S_081022 — Lab Sample ID: 240-171520-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: TRIP BLANK_105
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171520-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 14:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/16/22 14:57*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/16/22 14:57*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/16/22 14:57*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/16/22 14:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: MW-108S_081022

Date Collected: 08/10/22 12:20
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171520-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/20/22 17:54*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 17:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 17:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 17:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/16/22 17:03*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/16/22 17:03*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/16/22 17:03*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/16/22 17:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: MW-142S_081022
Date Collected: 08/10/22 13:40
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171520-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*67*		*66 - 120*		*08/20/22 18:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 17:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 17:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 17:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/16/22 17:28*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/16/22 17:28*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/16/22 17:28*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/16/22 17:28*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171520-1	TRIP BLANK_105	96	90	93	84
240-171520-2	MW-108S_081022	95	90	95	82
240-171520-3	MW-142S_081022	94	91	98	83
240-171520-3 MS	MW-142S-MS_081022	91	97	96	85
240-171520-3 MSD	MW-142S-MSD_081022	90	96	98	83
LCS 240-539087/4	Lab Control Sample	89	97	97	85
MB 240-539087/6	Method Blank	93	88	92	83

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171520-2	MW-108S_081022	72
240-171520-3	MW-142S_081022	67
240-171520-3 MS	MW-142S-MS_081022	75
240-171520-3 MSD	MW-142S-MSD_081022	70
LCS 240-539584/3	Lab Control Sample	75
MB 240-539584/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539087/6
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 13:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 13:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 13:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 13:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 13:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 13:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/16/22 13:42*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/16/22 13:42*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/16/22 13:42*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/16/22 13:42*	*1*

Lab Sample ID: LCS 240-539087/4
Matrix: Water
Analysis Batch: 539087

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.1		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	24.2		ug/L		97	77 - 123
Tetrachloroethene	25.0	23.3		ug/L		93	76 - 123
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	75 - 124
Trichloroethene	25.0	22.9		ug/L		92	70 - 122
Vinyl chloride	12.5	11.1		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171520-3 MS
Matrix: Water
Analysis Batch: 539087

Client Sample ID: MW-142S-MS_081022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.1		ug/L		93	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	1.0	U	12.5	11.9		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171520-3 MS
Matrix: Water
Analysis Batch: 539087

Client Sample ID: MW-142S-MS_081022
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171520-3 MSD
Matrix: Water
Analysis Batch: 539087

Client Sample ID: MW-142S-MSD_081022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	25.0	21.1		ug/L		84	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	12.3		ug/L		98	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539584/5
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 16:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/20/22 16:19*	*1*

Lab Sample ID: LCS 240-539584/3
Matrix: Water
Analysis Batch: 539584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.4		ug/L		104	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-3 MS
Matrix: Water
Analysis Batch: 539584

Client Sample ID: MW-142S-MS_081022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171520-3 MSD
Matrix: Water
Analysis Batch: 539584

Client Sample ID: MW-142S-MSD_081022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

GC/MS VOA

Analysis Batch: 539087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171520-1	TRIP BLANK_105	Total/NA	Water	8260D	
240-171520-2	MW-108S_081022	Total/NA	Water	8260D	
240-171520-3	MW-142S_081022	Total/NA	Water	8260D	
MB 240-539087/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539087/4	Lab Control Sample	Total/NA	Water	8260D	
240-171520-3 MS	MW-142S-MS_081022	Total/NA	Water	8260D	
240-171520-3 MSD	MW-142S-MSD_081022	Total/NA	Water	8260D	

Analysis Batch: 539584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171520-2	MW-108S_081022	Total/NA	Water	8260D SIM	
240-171520-3	MW-142S_081022	Total/NA	Water	8260D SIM	
MB 240-539584/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539584/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171520-3 MS	MW-142S-MS_081022	Total/NA	Water	8260D SIM	
240-171520-3 MSD	MW-142S-MSD_081022	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: TRIP BLANK_105

Lab Sample ID: 240-171520-1
Date Collected: 08/10/22 00:00
Matrix: Water
Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539087	SAM	EET CAN	08/16/22 14:57

Client Sample ID: MW-108S_081022

Lab Sample ID: 240-171520-2
Date Collected: 08/10/22 12:20
Matrix: Water
Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539087	SAM	EET CAN	08/16/22 17:03
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 17:54

Client Sample ID: MW-142S_081022

Lab Sample ID: 240-171520-3
Date Collected: 08/10/22 13:40
Matrix: Water
Date Received: 08/13/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539087	SAM	EET CAN	08/16/22 17:28
Total/NA	Analysis	8260D SIM		1	539584	SAM	EET CAN	08/20/22 18:17

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_105	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-108S-081022	8/10/22	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D; 3 VOAs for 8260D SIM
MW-142S-081022		1340		6						6					N	G	X	X	X	X	X	X	X	
MW-142S-MS-081022		1340		6						6					N	G	X	X	X	X	X	X	X	MS/MSD
MW-142S-MSD-081022		1340		6						6					N	G	X	X	X	X	X	X	X	MS/MSD

240-171520 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sa... ...ained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati Ave.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lottie Jay	ARCADIS	8/10/22 1450	NOVI COLD STORAGE	ARCADIS	8/10/22 1450
Stu Turnbull	Arcadis	8/12/22 955	Jeri Hall	EETM	8/12/22 956
Jeri Hall	EETM	8/12/22 958	Jessica Lee	EETNC	8-13-22 0940

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171520
Barberton Facility

Client Arcadis Site Name Livonia

Cooler Received on 8-13-22 Opened on 8-13-22

Cooler unpacked by: me

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.0 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Y)
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? (Yes) No
    If yes, Questions 13-17 have been checked at the originating laboratory. me 8-13-22
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420/6 (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171520-1
Sample date: 2022-08-10
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

Sample preservation outliers for sample -003MS and MSD vials were not used to qualify field sample data. MS/MSD recoveries were acceptable and field sample -003 preservation was acceptable.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171520-1

		Sample Name:	TRIP BLANK_105				MW-108S_081022				MW-142S_081022			
		Lab Sample ID:	2401715201				2401715202				2401715203			
		Sample Date:	8/10/2022				8/10/2022				8/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

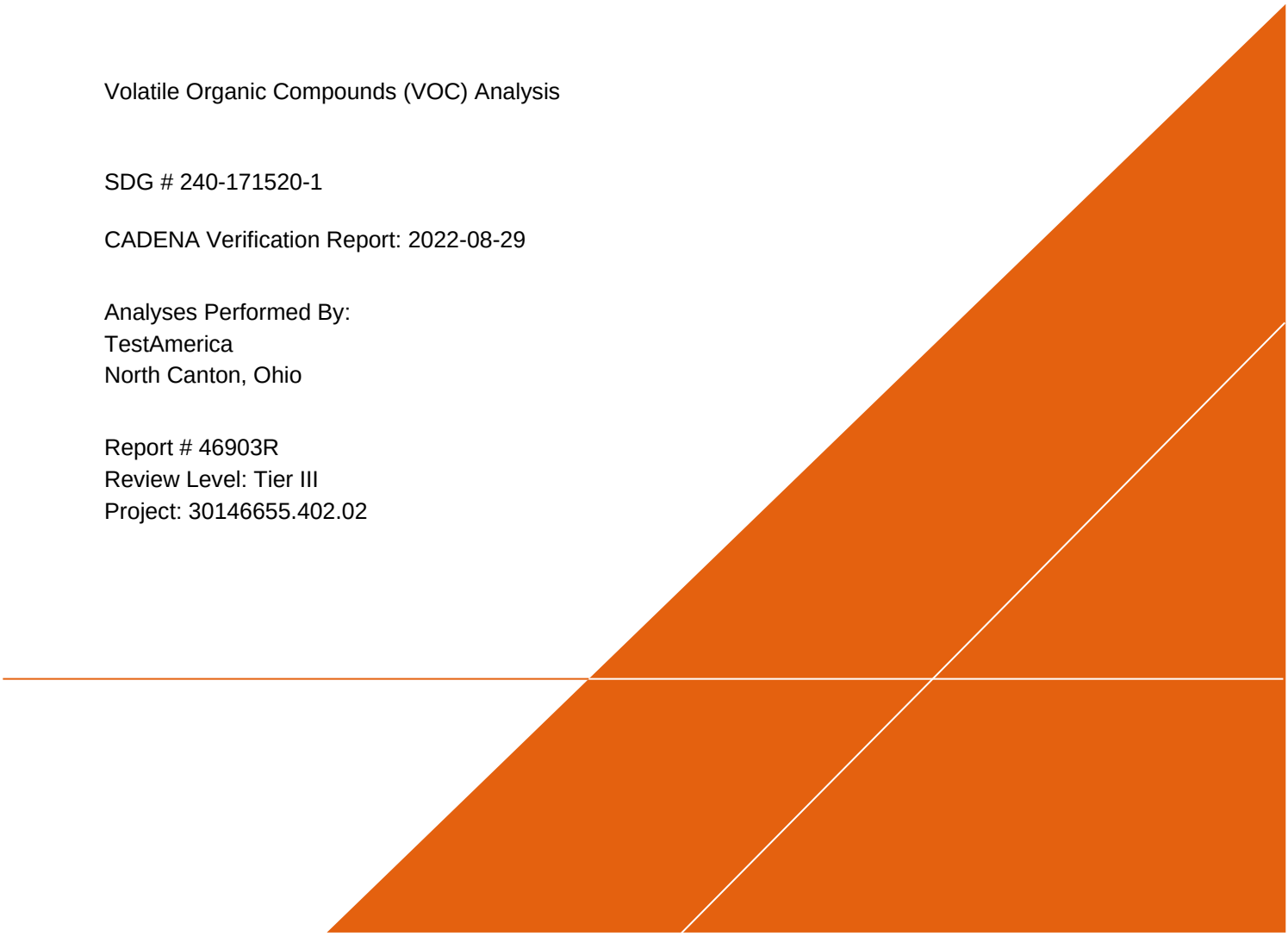
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171520-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46903R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171520-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_105	240-171520-1	Water	08/10/22		X	
MW-108S_081022	240-171520-2	Water	08/10/22		X	X
MW-142S_081022	240-171520-3	Water	08/10/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 26, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_105	8/16/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-108S-081022	8/10/22	1220		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D; 3 VOAs for 8260D SIM
MW-142S-081022		1340		6						6					N	G	X	X	X	X	X	X	X	
MW-142S-MS-081022		1340		6						6					N	G	X	X	X	X	X	X	X	MS/MSD
MW-142S-MSD-081022		1340		6						6					N	G	X	X	X	X	X	X	X	MS/MSD

240-171520 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sa... ...ained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati Ave.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lauren Jay	ARCADIS	8/10/22 1450	NOVI COLD STORAGE	ARCADIS	8/10/22 1450
Stu Turnbull	Arcadis	8/12/22 955	Lei Heal	EETM	8/12/22 956
Lei Heal	EETM	8/12/22 958	Jessica Lee	EETNC	8-13-22 0940

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: TRIP BLANK_105
Date Collected: 08/10/22 00:00
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171520-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 14:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/16/22 14:57*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/16/22 14:57*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/16/22 14:57*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*08/16/22 14:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: MW-108S_081022

Date Collected: 08/10/22 12:20
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171520-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/20/22 17:54*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 17:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 17:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 17:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/16/22 17:03*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/16/22 17:03*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/16/22 17:03*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/16/22 17:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171520-1

Client Sample ID: MW-142S_081022
Date Collected: 08/10/22 13:40
Date Received: 08/13/22 09:45

Lab Sample ID: 240-171520-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/20/22 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*67*		*66 - 120*		*08/20/22 18:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/16/22 17:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/16/22 17:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/16/22 17:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/16/22 17:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/16/22 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/16/22 17:28*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/16/22 17:28*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/16/22 17:28*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*08/16/22 17:28*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171871-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 9:05:22 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Job ID: 240-171871-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171871-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171871-1	TRIP BLANK_92	Water	08/18/22 00:00	08/20/22 09:35
240-171871-2	MW-133S_081822	Water	08/18/22 13:55	08/20/22 09:35

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Client Sample ID: TRIP BLANK_92 — Lab Sample ID: 240-171871-1

No Detections.

Client Sample ID: MW-133S_081822 — Lab Sample ID: 240-171871-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Client Sample ID: TRIP BLANK_92

Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171871-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 17:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 17:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 17:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/23/22 17:58*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/23/22 17:58*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/23/22 17:58*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 17:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Client Sample ID: MW-133S_081822
Date Collected: 08/18/22 13:55
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171871-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/26/22 20:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 18:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 18:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 18:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/23/22 18:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/23/22 18:23*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 18:23*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/23/22 18:23*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171824-E-2 MS	Matrix Spike	87	90	96	88
240-171824-H-2 MSD	Matrix Spike Duplicate	86	90	93	86
240-171871-1	TRIP BLANK_92	90	94	92	88
240-171871-2	MW-133S_081822	88	98	94	86
LCS 240-539814/5	Lab Control Sample	87	93	95	86
MB 240-539814/8	Method Blank	89	93	95	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171856-L-3 MS	Matrix Spike	91
240-171856-P-3 MSD	Matrix Spike Duplicate	90
240-171871-2	MW-133S_081822	89
LCS 240-540388/3	Lab Control Sample	92
MB 240-540388/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539814/8
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 12:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 12:03*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/23/22 12:03*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 12:03*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 12:03*	*1*

Lab Sample ID: LCS 240-539814/5
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.3		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	18.4		ug/L		92	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	20.0		ug/L		100	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.9		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.3		ug/L		86	61 - 124
Vinyl chloride	1.0	U	20.0	17.3		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171824-H-2 MSD
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	20.3		ug/L		102	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 136	6	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540388/4
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 18:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/26/22 18:32*	*1*

Lab Sample ID: LCS 240-540388/3
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*

Lab Sample ID: 240-171856-L-3 MS
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.7		ug/L		117	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171856-P-3 MSD
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

GC/MS VOA

Analysis Batch: 539814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171871-1	TRIP BLANK_92	Total/NA	Water	8260D	
240-171871-2	MW-133S_081822	Total/NA	Water	8260D	
MB 240-539814/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539814/5	Lab Control Sample	Total/NA	Water	8260D	
240-171824-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171824-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171871-2	MW-133S_081822	Total/NA	Water	8260D SIM	
MB 240-540388/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540388/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171856-L-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171856-P-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Client Sample ID: TRIP BLANK_92

Lab Sample ID: 240-171871-1

Date Collected: 08/18/22 00:00

Matrix: Water

Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 17:58

Client Sample ID: MW-133S_081822

Lab Sample ID: 240-171871-2

Date Collected: 08/18/22 13:55

Matrix: Water

Date Received: 08/20/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 18:23
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/26/22 20:39

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_92	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-133S-081822	8/18/22	1355		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171871 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Stark ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/18/22 1440	NOVI COLD STORAGE	ARCADIS	8/18/22 1440
	ARCADIS	8/19/22 1000	Gina Rivera	ETA	8/19/22 1000
	ETA	8/19/22 11:00	Received in Laboratory by:	ETNC	8-20-22 0935

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171811

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP

Cooler unpacked by: DME

Cooler Received on 8-20-22 Opened on 8-20-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No	
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No	NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	
-Were tamper/custody seals intact and uncompromised?	(Yes) No	NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

September 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171871-1
Sample date: 2022-08-18
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171871-1

		Sample Name:	TRIP BLANK_92				MW-133S_081822			
		Lab Sample ID:	2401718711				2401718712			
		Sample Date:	8/18/2022				8/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

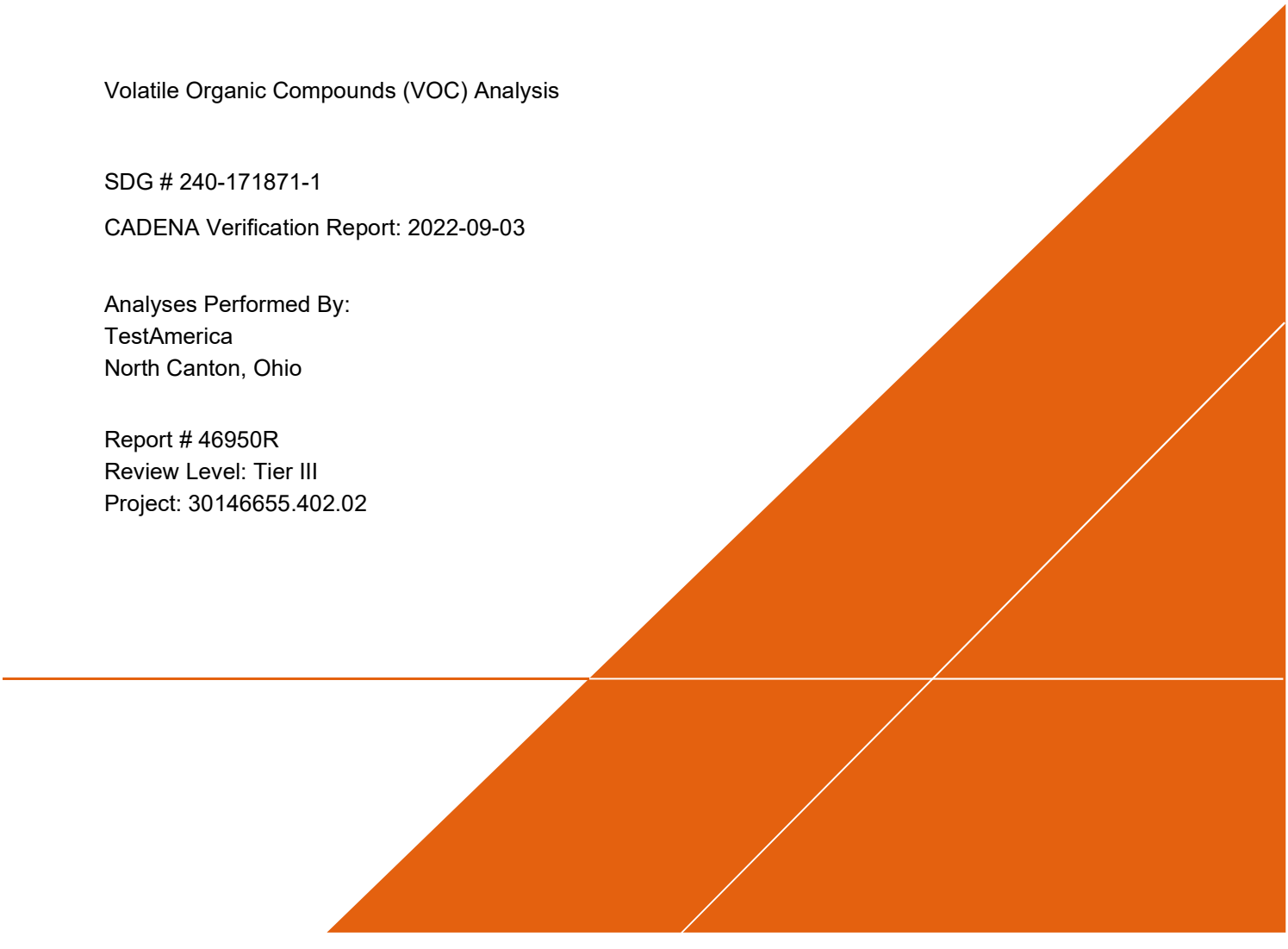
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171871-1

CADENA Verification Report: 2022-09-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46950R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171871-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_92	240-171871-1	Water	08/18/2022		X	
MW-133S_081822	240-171871-2	Water	08/18/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Pruthvi Kumar C

SIGNATURE:

DATE: September 26, 2022

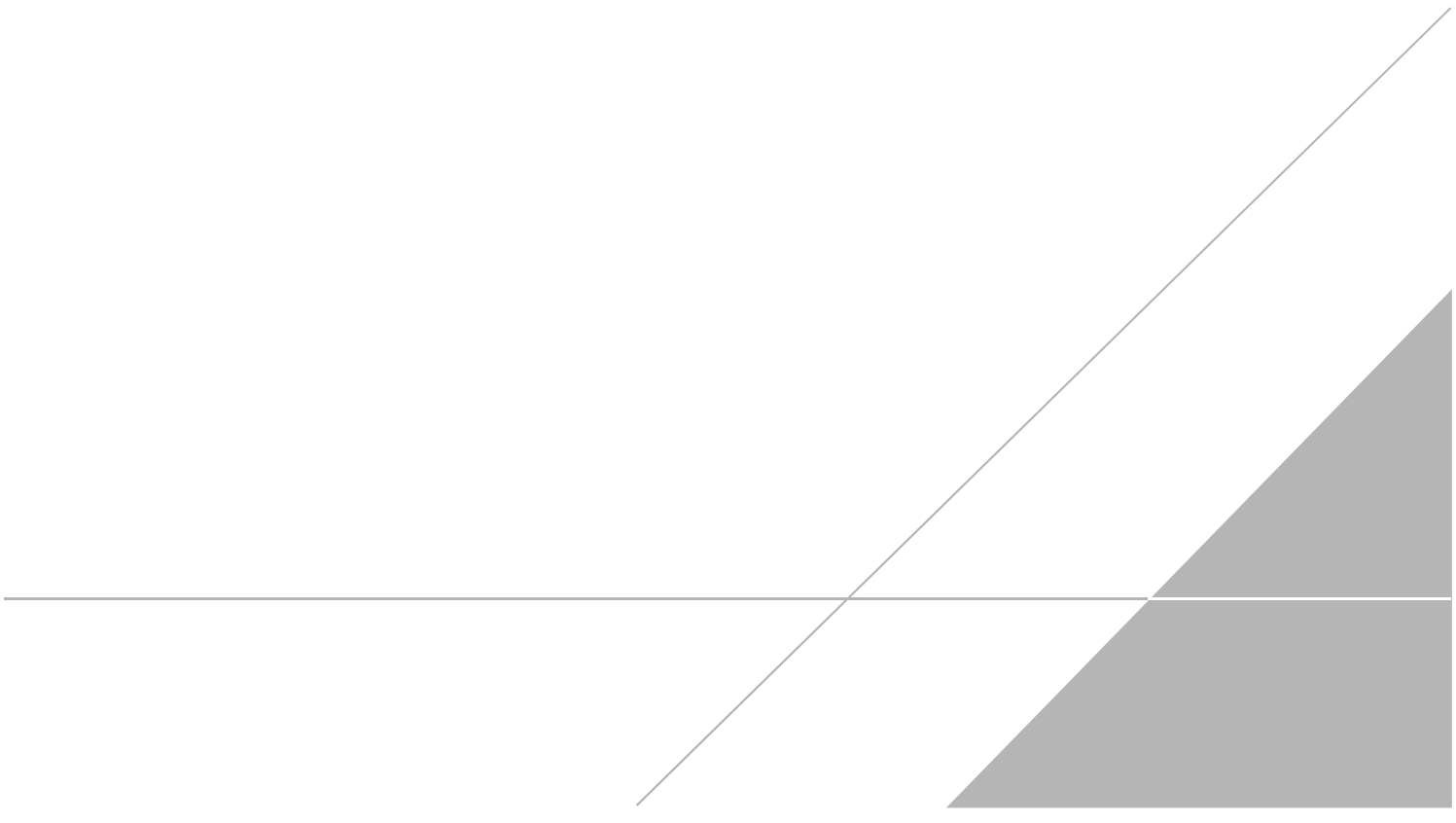
PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN

Chain of Custody Record

TestAmerica

TestAmerica Laboratories, Inc.

TestAmerica Laboratories location: Brighton — 10449 Citation — Suite 200 / Brighton, MI 48116 / 8102278261

Regulatory programs: DW NPDES RCRA Other

Client Contact

Company Name: Arcadis

Address: 28550 Cabot Drive Suite 500

City/State/Zip: Novi, MI 48377

Phone: 248-994-2240

Project Name: Fort Wayne

Project Number: 30049354

PO # 30049342402

Client Project Manager: Jenn Dimkovic

Telephone: 734-953-7439

Email: jennifer.dimkovic@arcadis.com

Sampler: Lottie Terry

Shipping/Shipment Carrier:

Shipping Tracking No:

Lab Contact: Christina Weaver

Telephone: 219-924-2329

Lab Contact: Mike DeMarco

Telephone: 330-966-9761

TAT requested (days):

1 week
2 weeks
1 week
2 days
1 day

Matrix: Air, Aqueous, Sediment, Solid, Tissue

Preservation Codes: None, HCL, HNO3, H2SO4, NaOH, Zn Acetate, Other

Analysis: 8260B, 8260B_SIM, RCE 6200, TCE 8260, Vinyl Chloride 8260, 1,4-Dioxane 8260SIM

Total # of containers

Filtered Sample (Y/N)

Perform MS/MSD (Y/N)

Sample Identification	Sample Date	Sample Time	Matrix	# of containers	Preservation	Filtered	Perform MS/MSD	Analysis	Sample Specific Notes / Special Instructions
TRIP BLANK_92	—	—		1			N	X	1 Trip Blank
MW-1335-081822	8/18/22	1855		6			N	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

Possible Hazard Identification: Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown

Special Instructions/QC Requirements & Comments: Fort Wayne

Relinquished by: [redacted] Company: ARCADIS Date/Time: 8/18/22 1440

Received by: [redacted] Company: ARCADIS Date/Time: 8/19/22 1440

Relinquished by: [redacted] Company: ARCADIS Date/Time: 8/19/22 1440

Received by: [redacted] Company: ARCADIS Date/Time: 8/19/22 1440

Relinquished by: [redacted] Company: TA Date/Time: 8/19/22 1440

Received by: [redacted] Company: BETNC Date/Time: 8-20-22 0825

Custody Seal Intact: Yes No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

9/2/2022

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Client Sample ID: TRIP BLANK_92

Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171871-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 17:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 17:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 17:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 17:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/23/22 17:58*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/23/22 17:58*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/23/22 17:58*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 17:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171871-1

Client Sample ID: MW-133S_081822
Date Collected: 08/18/22 13:55
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171871-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/26/22 20:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 18:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 18:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 18:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 18:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/23/22 18:23*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/23/22 18:23*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 18:23*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/23/22 18:23*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171638-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 12:56:26 PM
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Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Job ID: 240-171638-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171638-1

Comments
No additional comments.

Receipt
The samples were received on 8/17/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171638-1	TRIP BLANK_119	Water	08/15/22 00:00	08/17/22 09:30
240-171638-2	MW-135S_081522	Water	08/15/22 10:15	08/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Client Sample ID: TRIP BLANK_119 — Lab Sample ID: 240-171638-1

No Detections.

Client Sample ID: MW-135S_081522 — Lab Sample ID: 240-171638-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Client Sample ID: TRIP BLANK_119
Date Collected: 08/15/22 00:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171638-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 17:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 17:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 17:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/18/22 17:52*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/18/22 17:52*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/18/22 17:52*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 17:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Client Sample ID: MW-135S_081522
Date Collected: 08/15/22 10:15
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171638-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 22:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/22/22 22:16*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*08/18/22 18:14*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/18/22 18:14*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/18/22 18:14*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 18:14*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171590-B-3 MS	Matrix Spike	106	109	104	105
240-171590-B-3 MSD	Matrix Spike Duplicate	105	108	104	103
240-171638-1	TRIP BLANK_119	110	103	102	102
240-171638-2	MW-135S_081522	113	105	103	102
LCS 240-539355/5	Lab Control Sample	109	110	106	107
MB 240-539355/8	Method Blank	108	104	100	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171638-2	MW-135S_081522	73
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539355/8
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/18/22 11:34*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 11:34*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/18/22 11:34*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 11:34*	*1*

Lab Sample ID: LCS 240-539355/5
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.9		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.1		ug/L		100	77 - 123
Tetrachloroethene	20.0	19.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	21.3		ug/L		106	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	21.3		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-171590-B-3 MS
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1000	U	20000	21700		ug/L		109	56 - 135
cis-1,2-Dichloroethene	38000		20000	58600		ug/L		104	66 - 128
Tetrachloroethene	1000	U	20000	19700		ug/L		98	62 - 131
trans-1,2-Dichloroethene	1000	U	20000	21400		ug/L		107	56 - 136
Trichloroethene	1000	U	20000	19700		ug/L		99	61 - 124
Vinyl chloride	10000		20000	30900		ug/L		104	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171590-B-3 MS
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171590-B-3 MSD
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1000	U	20000	21100		ug/L		105	56 - 135	3	26
cis-1,2-Dichloroethene	38000		20000	58300		ug/L		102	66 - 128	1	14
Tetrachloroethene	1000	U	20000	19400		ug/L		97	62 - 131	1	20
trans-1,2-Dichloroethene	1000	U	20000	21300		ug/L		107	56 - 136	0	15
Trichloroethene	1000	U	20000	19100		ug/L		95	61 - 124	3	15
Vinyl chloride	10000		20000	30500		ug/L		102	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/22/22 17:51*	*1*

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

GC/MS VOA

Analysis Batch: 539355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171638-1	TRIP BLANK_119	Total/NA	Water	8260D	
240-171638-2	MW-135S_081522	Total/NA	Water	8260D	
MB 240-539355/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539355/5	Lab Control Sample	Total/NA	Water	8260D	
240-171590-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171590-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171638-2	MW-135S_081522	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Client Sample ID: TRIP BLANK_119

Lab Sample ID: 240-171638-1

Date Collected: 08/15/22 00:00

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 17:52

Client Sample ID: MW-135S_081522

Lab Sample ID: 240-171638-2

Date Collected: 08/15/22 10:15

Matrix: Water

Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 18:14
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 22:16

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171638-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christian Gurrido	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_119	8/15/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1355_081522	8/15/22	1015		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171638 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Stark Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christ Gurrido	Arcadis	8/15/22 1330	Novi Cold Storage	Arcadis	8/15/22 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/16/22 1116	[illegible]	EE TA	8/16/22 1115
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EE TA	8/16/22 11:20	Tammy Rogers	EETNC	8-17-22 930

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171638
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Boyer

Cooler Received on 8-17-22 Opened on 8-17-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171638-1
Sample date: 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171638-1

		Sample Name:	TRIP BLANK_119				MW-135S_081522			
		Lab Sample ID:	2401716381				2401716382			
		Sample Date:	8/15/2022				8/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

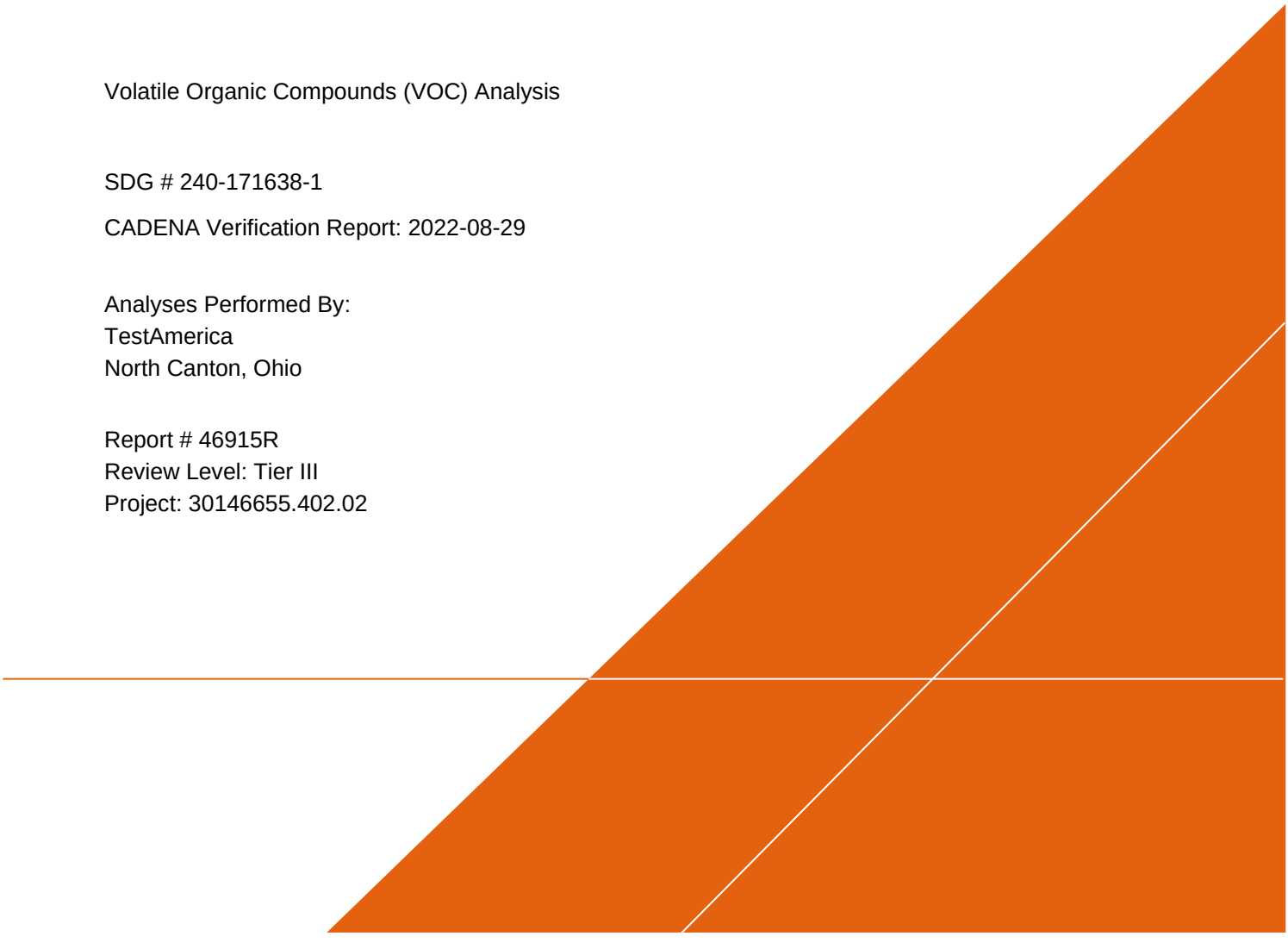
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171638-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46915R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171638-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_119	240-171638-1	Water	08/15/22		X	
MW-135S_081522	240-171638-2	Water	08/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christian Garrido	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_119	8/15/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1355-081522	8/15/22	1015		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171638 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christa Stevens	Arcadis	8/15/22 1330	Novi Cold Storage	Arcadis	8/15/22 1330
[illegible]	Arcadis	8/16/22 1116	[illegible]	EE TA	8/16/22 11:15
[illegible]	EE TA	8/16/22 11:20	Received in Laboratory by: [illegible]	Company: EETNC	Date/Time: 8-17-22 930

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Client Sample ID: TRIP BLANK_119
Lab Sample ID: 240-171638-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 17:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 17:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 17:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 17:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/18/22 17:52*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/18/22 17:52*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/18/22 17:52*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 17:52*	*1*

Client Sample ID: MW-135S_081522
Lab Sample ID: 240-171638-2
Date Collected: 08/15/22 10:15
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 22:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/22/22 22:16*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*08/18/22 18:14*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/18/22 18:14*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/18/22 18:14*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 18:14*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171640-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:06:28 PM
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171640-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171640-1

Comments
No additional comments.

Receipt
The samples were received on 8/17/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171640-1	TRIP BLANK_115	Water	08/15/22 00:00	08/17/22 09:30
240-171640-2	MW-137S_081522	Water	08/15/22 11:10	08/17/22 09:30
240-171640-3	MW-136S_081522	Water	08/15/22 12:10	08/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Client Sample ID: TRIP BLANK_115 — Lab Sample ID: 240-171640-1

No Detections.

Client Sample ID: MW-137S_081522 — Lab Sample ID: 240-171640-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-136S_081522 — Lab Sample ID: 240-171640-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.88	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Client Sample ID: TRIP BLANK_115
Date Collected: 08/15/22 00:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171640-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/18/22 19:21*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/18/22 19:21*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/18/22 19:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Client Sample ID: MW-137S_081522
Date Collected: 08/15/22 11:10
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171640-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 23:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/22/22 23:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 19:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 19:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 19:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:43	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			08/18/22 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/18/22 19:43*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/18/22 19:43*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/18/22 19:43*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/18/22 19:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Client Sample ID: MW-136S_081522
Date Collected: 08/15/22 12:10
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171640-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 23:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/22/22 23:28*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 20:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 20:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 20:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 20:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 20:05	1
Vinyl chloride	**0.88**	**J**	1.0	0.45	ug/L			08/18/22 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 20:05*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 20:05*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/18/22 20:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/18/22 20:05*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171590-B-3 MS	Matrix Spike	106	109	104	105
240-171590-B-3 MSD	Matrix Spike Duplicate	105	108	104	103
240-171640-1	TRIP BLANK_115	111	105	102	104
240-171640-2	MW-137S_081522	112	102	101	104
240-171640-3	MW-136S_081522	111	104	102	103
LCS 240-539355/5	Lab Control Sample	109	110	106	107
MB 240-539355/8	Method Blank	108	104	100	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171640-2	MW-137S_081522	72
240-171640-3	MW-136S_081522	75
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539355/8
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/18/22 11:34*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 11:34*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/18/22 11:34*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 11:34*	*1*

Lab Sample ID: LCS 240-539355/5
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.9		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.1		ug/L		100	77 - 123
Tetrachloroethene	20.0	19.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	21.3		ug/L		106	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	21.3		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-171590-B-3 MS
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1000	U	20000	21700		ug/L		109	56 - 135
cis-1,2-Dichloroethene	38000		20000	58600		ug/L		104	66 - 128
Tetrachloroethene	1000	U	20000	19700		ug/L		98	62 - 131
trans-1,2-Dichloroethene	1000	U	20000	21400		ug/L		107	56 - 136
Trichloroethene	1000	U	20000	19700		ug/L		99	61 - 124
Vinyl chloride	10000		20000	30900		ug/L		104	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171590-B-3 MS
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-171590-B-3 MSD
Matrix: Water
Analysis Batch: 539355

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1000	U	20000	21100		ug/L		105	56 - 135	3	26
cis-1,2-Dichloroethene	38000		20000	58300		ug/L		102	66 - 128	1	14
Tetrachloroethene	1000	U	20000	19400		ug/L		97	62 - 131	1	20
trans-1,2-Dichloroethene	1000	U	20000	21300		ug/L		107	56 - 136	0	15
Trichloroethene	1000	U	20000	19100		ug/L		95	61 - 124	3	15
Vinyl chloride	10000		20000	30500		ug/L		102	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/22/22 17:51*	*1*

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

GC/MS VOA

Analysis Batch: 539355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171640-1	TRIP BLANK_115	Total/NA	Water	8260D	
240-171640-2	MW-137S_081522	Total/NA	Water	8260D	
240-171640-3	MW-136S_081522	Total/NA	Water	8260D	
MB 240-539355/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539355/5	Lab Control Sample	Total/NA	Water	8260D	
240-171590-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171590-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171640-2	MW-137S_081522	Total/NA	Water	8260D SIM	
240-171640-3	MW-136S_081522	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Client Sample ID: TRIP BLANK_115

Lab Sample ID: 240-171640-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 19:21

Client Sample ID: MW-137S_081522

Lab Sample ID: 240-171640-2
Date Collected: 08/15/22 11:10
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 19:43
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 23:04

Client Sample ID: MW-136S_081522

Lab Sample ID: 240-171640-3
Date Collected: 08/15/22 12:10
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 20:05
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 23:28

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171640-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_115	8/15/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-137S_081522	8/15/22	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-136S_081522	8/15/22	1210		6						6					N	G	X	X	X	X	X	X	X	1

240-171640 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12088 Brewster St. ROW, Capital ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/15/22 1415	NOVI GOLD STORAGE	ARCADIS	8/15/22 1415
[signature]	Arcadis	8/16/22 1116	[signature]	EETA	8/16/22 11:15
[signature]	EETA	8/16/22 11:20	Received in Laboratory by: [signature]	EETNC	8-17-22 930

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171640
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Boyer

Cooler Received on 8-17-22 Opened on 8-17-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 4 ~~Foam~~ Box Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	Yes	No
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171640-1
Sample date: 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171640-1

		Sample Name:	TRIP BLANK_115				MW-137S_081522				MW-136S_081522			
		Lab Sample ID:	2401716401				2401716402				2401716403			
		Sample Date:	8/15/2022				8/15/2022				8/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	0.88	1.0	ug/l	J
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

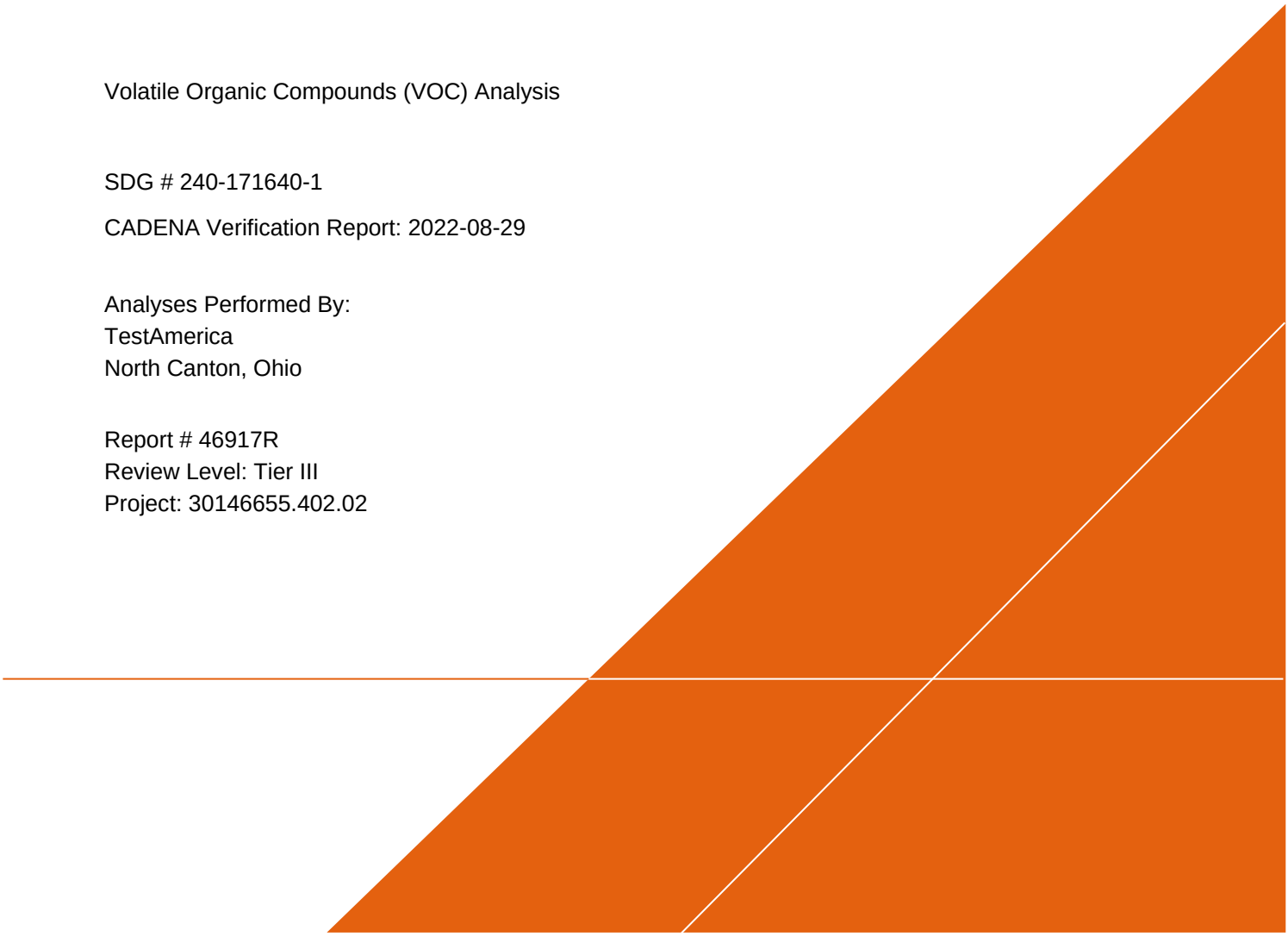
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171640-1

CADENA Verification Report: 2022-08-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46917R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171640-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_115	240-171640-1	Water	08/15/22		X	
MW-137S_081522	240-171640-2	Water	08/15/22		X	X
MW-136S_081522	240-171640-3	Water	08/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 22, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 23, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lottie Jay	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30080642.402.04	Shipping/Tracking No:			
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_115	8/15/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1375_081522	8/15/22	1110		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-1365_081522	8/15/22	1210		6						6					N	G	X	X	X	X	X	X	X	1

240-171640 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12088 Brewster St. ROW, Capitol ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/15/22 1415	NOVI GOLD STORAGE	ARCADIS	8/15/22 1415
[signature]	Arcadis	8/16/22 1116	[signature]	EETA	8/16/22 11:15
[signature]	EETA	8/16/22 11:20	Received in Laboratory by: [signature]	EETNC	8-17-22 930

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Client Sample ID: TRIP BLANK_115
Lab Sample ID: 240-171640-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/18/22 19:21*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/18/22 19:21*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/18/22 19:21*	*1*

Client Sample ID: MW-137S_081522
Lab Sample ID: 240-171640-2
Date Collected: 08/15/22 11:10
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 23:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/22/22 23:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 19:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 19:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 19:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 19:43	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			08/18/22 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/18/22 19:43*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/18/22 19:43*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/18/22 19:43*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/18/22 19:43*	*1*

Client Sample ID: MW-136S_081522
Lab Sample ID: 240-171640-3
Date Collected: 08/15/22 12:10
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 23:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/22/22 23:28*	*1*

Client Sample ID: MW-136S_081522
Lab Sample ID: 240-171640-3

Date Collected: 08/15/22 12:10
Matrix: Water
Date Received: 08/17/22 09:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 20:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 20:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 20:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 20:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 20:05	1
Vinyl chloride	**0.88**	**J**	1.0	0.45	ug/L			08/18/22 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 20:05*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 20:05*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/18/22 20:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/18/22 20:05*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171819-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/2/2022 8:50:05 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Job ID: 240-171819-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171819-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171819-1	TRIP BLANK_25	Water	08/17/22 00:00	08/19/22 09:50
240-171819-2	MW-138S_081722	Water	08/17/22 09:50	08/19/22 09:50
240-171819-3	DUP-09	Water	08/17/22 00:00	08/19/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Client Sample ID: TRIP BLANK_25 — Lab Sample ID: 240-171819-1

No Detections.

Client Sample ID: MW-138S_081722 — Lab Sample ID: 240-171819-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-09 — Lab Sample ID: 240-171819-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.3		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Client Sample ID: TRIP BLANK_25
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171819-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 16:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 16:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 16:39*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/22/22 16:39*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 16:39*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 16:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Client Sample ID: MW-138S_081722
Date Collected: 08/17/22 09:50
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171819-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/25/22 00:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 17:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 17:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:04	1
Vinyl chloride	**2.2**		1.0	0.45	ug/L			08/22/22 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 17:04*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/22/22 17:04*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 17:04*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 17:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Client Sample ID: DUP-09
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171819-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 00:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/25/22 00:50*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 17:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 17:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:29	1
Vinyl chloride	**2.3**		1.0	0.45	ug/L			08/22/22 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/22/22 17:29*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/22/22 17:29*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/22/22 17:29*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 17:29*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171819-1	TRIP BLANK_25	89	93	93	87
240-171819-2	MW-138S_081722	88	93	94	87
240-171819-3	DUP-09	86	96	92	87
240-171821-E-4 MSD	Matrix Spike Duplicate	85	93	95	86
240-171821-H-4 MS	Matrix Spike	88	91	96	88
LCS 240-539643/5	Lab Control Sample	86	92	97	86
MB 240-539643/8	Method Blank	89	95	95	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171819-2	MW-138S_081722	89
240-171819-3	DUP-09	91
240-171821-I-4 MS	Matrix Spike	86
240-171821-M-4 MSD	Matrix Spike Duplicate	88
LCS 240-540081/3	Lab Control Sample	91
MB 240-540081/4	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539643/8
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 12:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 12:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 12:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 12:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 12:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 12:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 12:29*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 12:29*	*1*

Lab Sample ID: LCS 240-539643/5
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.0		ug/L		85	77 - 123
Tetrachloroethene	20.0	19.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	17.5		ug/L		88	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	18.3		ug/L		91	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171821-E-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-H-4 MS
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.8		ug/L		84	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*08/24/22 18:05*	*1*

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171821-I-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-M-4 MSD
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

GC/MS VOA

Analysis Batch: 539643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171819-1	TRIP BLANK_25	Total/NA	Water	8260D	
240-171819-2	MW-138S_081722	Total/NA	Water	8260D	
240-171819-3	DUP-09	Total/NA	Water	8260D	
MB 240-539643/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539643/5	Lab Control Sample	Total/NA	Water	8260D	
240-171821-E-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171821-H-4 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171819-2	MW-138S_081722	Total/NA	Water	8260D SIM	
240-171819-3	DUP-09	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171821-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Client Sample ID: TRIP BLANK_25

Lab Sample ID: 240-171819-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 16:39

Client Sample ID: MW-138S_081722

Lab Sample ID: 240-171819-2
Date Collected: 08/17/22 09:50
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 17:04
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 00:24

Client Sample ID: DUP-09

Lab Sample ID: 240-171819-3
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 17:29
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 00:50

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171819-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis		Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling; Job/SDG No:
Phone: 248-994-2240		Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			
Project Number: 30080642.402.04					
PO # 30080642.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_25	8/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-138s-08/17/22	8/17/22	0950		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-09	8/17/22	—		6						6					N	G	X	X	X	X	X	X	X	"

240-171819 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34450 Beacon Front Yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/17/22/1340	Arcadis Cold Stor	Arcadis	08/17/22/1340
[illegible]	Arcadis	8/18/22 950	Gina Rivera	ETA	8-18-22 9:50
Gina Rivera	ETA	8-18-22 1700	Received in Laboratory by: [illegible]	ETA	8/19/22 9:50

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Eurofins - Canton Sample Receipt Form/Narrative **Login # : 178819**
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-19-22 Opened on 8-19-22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TR Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.8 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity ____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

DATA VERIFICATION REPORT

September 02, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171819-1
Sample date: 2022-08-17
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-02
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171819-1

		Sample Name:	TRIP BLANK_25				MW-138S_081722				DUP-09			
		Lab Sample ID:	2401718191				2401718192				2401718193			
		Sample Date:	8/17/2022				8/17/2022				8/17/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	2.2	1.0	ug/l	---	2.3	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

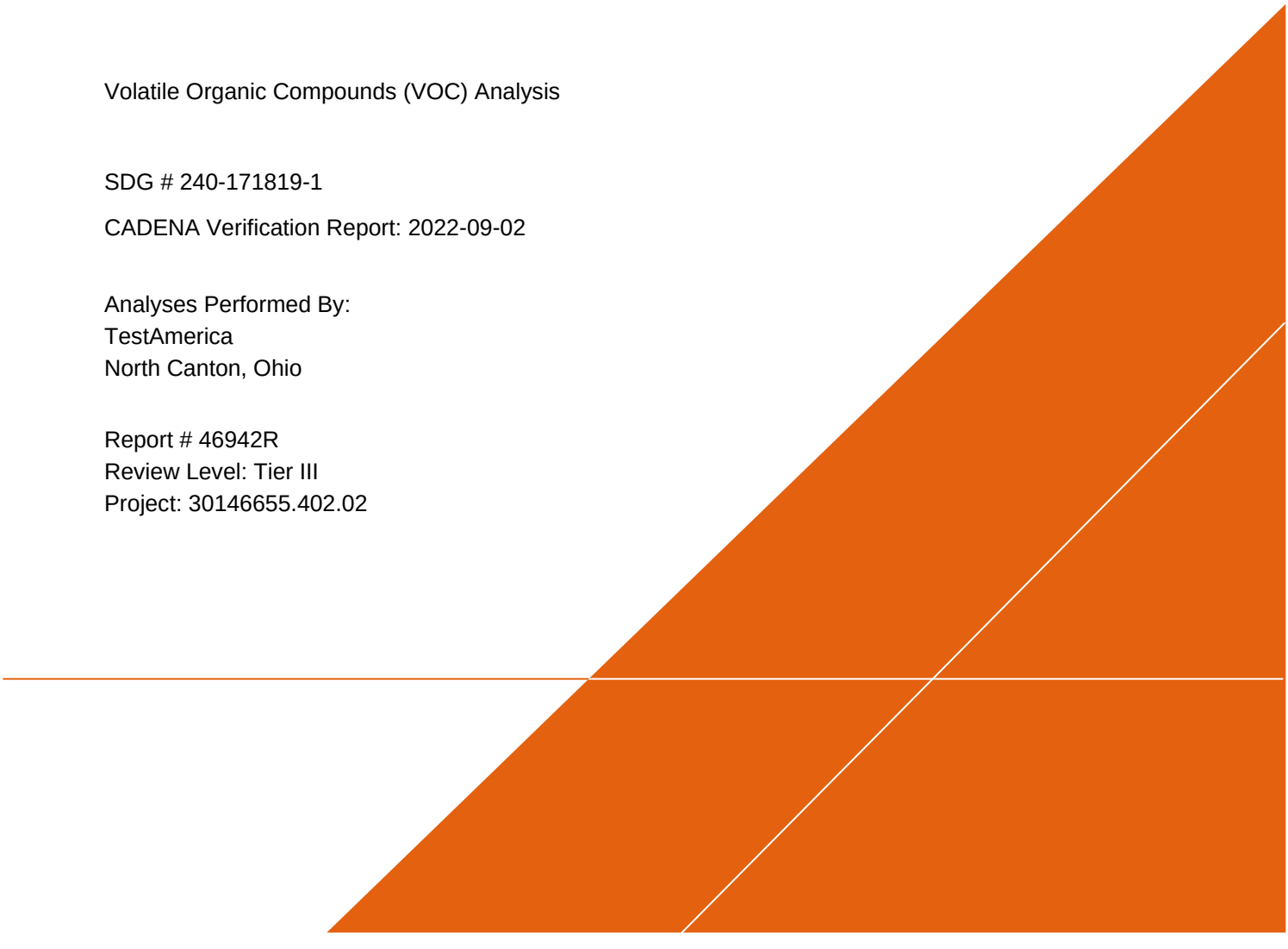
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171819-1

CADENA Verification Report: 2022-09-02

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46942R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171819-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_25	240-171819-1	Water	08/17/22		X	
MW-138S_081722	240-171819-2	Water	08/17/22		X	X
DUP-09	240-171819-3	Water	08/17/22	MW-138S_081722	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-138S_081722 / DUP-09	Vinyl chloride	2.2	2.3	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 26, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 27, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_25	8/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-138s_08172250	08/17/22	0950		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
DUP-09	8/17/22	—		6						6					N	G	X	X	X	X	X	X	X	1

240-171819 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34450 Beacon Front Yard
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	08/17/22/1340	Arcadis Cold Stor	Arcadis	08/17/22/1340
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/18/22 950	Gina Rivera	ETA	8-18-22 9:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Gina Rivera	ETA	8-18-22 1700	[illegible]	ETA	8/19/22 9:50

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09/02/2022

Client Sample ID: TRIP BLANK_25
Lab Sample ID: 240-171819-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 16:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 16:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 16:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 16:39*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/22/22 16:39*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 16:39*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 16:39*	*1*

Client Sample ID: MW-138S_081722
Lab Sample ID: 240-171819-2
Date Collected: 08/17/22 09:50
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/25/22 00:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 17:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 17:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:04	1
Vinyl chloride	**2.2**		1.0	0.45	ug/L			08/22/22 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/22/22 17:04*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/22/22 17:04*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 17:04*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 17:04*	*1*

Client Sample ID: DUP-09
Lab Sample ID: 240-171819-3
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 00:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/25/22 00:50*	*1*

Client Sample ID: DUP-09
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171819-3
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 17:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 17:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:29	1
Vinyl chloride	**2.3**		1.0	0.45	ug/L			08/22/22 17:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*08/22/22 17:29*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/22/22 17:29*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/22/22 17:29*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/22/22 17:29*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-170881-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/9/2022 10:30:55 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-170881-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-170881-1

Comments
No additional comments.

Receipt
The samples were received on 8/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) for analytical batch 537536 exceeded control criteria for Vinyl Chloride. The samples associated with this CCV were non-detect for the affected analyte. In accordance with the laboratory SOP, a low level CCV at the reporting limit (labeled as an MRL) was analyzed and the affected compound was detected; therefore the data has been reported. No further corrective action was required: TRIP BLANK_42 (240-170881-1), MW-139S_080122 (240-170881-2), MW-232_080122 (240-170881-3) and MW-232S_080122 (240-170881-4).

Method 8260D: NO MS/MSD in batch 537536 due to an instrument fault: TRIP BLANK_42 (240-170881-1), MW-139S_080122 (240-170881-2), MW-232_080122 (240-170881-3) and MW-232S_080122 (240-170881-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EETNC CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EETNC CAN
5030C	Purge and Trap	SW846	EETNC CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-170881-1	TRIP BLANK_42	Water	08/01/22 00:00	08/03/22 09:45
240-170881-2	MW-139S_080122	Water	08/01/22 13:05	08/03/22 09:45
240-170881-3	MW-232_080122	Water	08/01/22 14:00	08/03/22 09:45
240-170881-4	MW-232S_080122	Water	08/01/22 14:40	08/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Client Sample ID: TRIP BLANK_42 — Lab Sample ID: 240-170881-1

No Detections.

Client Sample ID: MW-139S_080122 — Lab Sample ID: 240-170881-2

No Detections.

Client Sample ID: MW-232_080122 — Lab Sample ID: 240-170881-3

No Detections.

Client Sample ID: MW-232S_080122 — Lab Sample ID: 240-170881-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Client Sample ID: TRIP BLANK_42

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170881-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 16:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 16:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/04/22 16:49*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 16:49*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/04/22 16:49*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*08/04/22 16:49*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Client Sample ID: MW-139S_080122

Date Collected: 08/01/22 13:05
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170881-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 16:44*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/04/22 17:16*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/04/22 17:16*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 17:16*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*08/04/22 17:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Client Sample ID: MW-232_080122

Date Collected: 08/01/22 14:00
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170881-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 17:08*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 17:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 17:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 17:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/04/22 17:43*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/04/22 17:43*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/04/22 17:43*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*08/04/22 17:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Client Sample ID: MW-232S_080122
Date Collected: 08/01/22 14:40
Date Received: 08/03/22 09:45

Lab Sample ID: 240-170881-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 17:32*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 18:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 18:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 18:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/04/22 18:12*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/04/22 18:12*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/04/22 18:12*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*08/04/22 18:12*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-170881-1	TRIP BLANK_42	107	104	110	113
240-170881-2	MW-139S_080122	109	103	108	114
240-170881-3	MW-232_080122	108	102	109	114
240-170881-4	MW-232S_080122	109	101	109	115
LCS 240-537536/5	Lab Control Sample	92	115	115	101
MB 240-537536/8	Method Blank	104	104	108	107

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-170881-2	MW-139S_080122	81
240-170881-3	MW-232_080122	82
240-170881-4	MW-232S_080122	81
240-170886-F-2 MS	Matrix Spike	80
240-170886-F-2 MSD	Matrix Spike Duplicate	83
LCS 240-537705/3	Lab Control Sample	80
MB 240-537705/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-537536/8
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 14:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 14:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 14:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 14:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/04/22 14:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/04/22 14:31*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 14:31*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 14:31*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/04/22 14:31*	*1*

Lab Sample ID: LCS 240-537536/5
Matrix: Water
Analysis Batch: 537536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.7		ug/L		108	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	22.1		ug/L		110	76 - 123
trans-1,2-Dichloroethene	20.0	19.9		ug/L		100	75 - 124
Trichloroethene	20.0	20.1		ug/L		101	70 - 122
Vinyl chloride	20.0	14.7		ug/L		74	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-537705/4
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 11:41*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-537705/3
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MS
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	12.2		ug/L		122	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-170886-F-2 MSD
Matrix: Water
Analysis Batch: 537705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	14	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

GC/MS VOA

Analysis Batch: 537536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170881-1	TRIP BLANK_42	Total/NA	Water	8260D	
240-170881-2	MW-139S_080122	Total/NA	Water	8260D	
240-170881-3	MW-232_080122	Total/NA	Water	8260D	
240-170881-4	MW-232S_080122	Total/NA	Water	8260D	
MB 240-537536/8	Method Blank	Total/NA	Water	8260D	
LCS 240-537536/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 537705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-170881-2	MW-139S_080122	Total/NA	Water	8260D SIM	
240-170881-3	MW-232_080122	Total/NA	Water	8260D SIM	
240-170881-4	MW-232S_080122	Total/NA	Water	8260D SIM	
MB 240-537705/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-537705/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-170886-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-170886-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Client Sample ID: TRIP BLANK_42

Lab Sample ID: 240-170881-1
Matrix: Water
Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 16:49	LEE	EETNC CAN

Client Sample ID: MW-139S_080122

Lab Sample ID: 240-170881-2
Matrix: Water
Date Collected: 08/01/22 13:05
Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 17:16	LEE	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 16:44	SAM	EETNC CAN

Client Sample ID: MW-232_080122

Lab Sample ID: 240-170881-3
Matrix: Water
Date Collected: 08/01/22 14:00
Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 17:43	LEE	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 17:08	SAM	EETNC CAN

Client Sample ID: MW-232S_080122

Lab Sample ID: 240-170881-4
Matrix: Water
Date Collected: 08/01/22 14:40
Date Received: 08/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	537536	08/04/22 18:12	LEE	EETNC CAN
Total/NA	Analysis	8260D SIM		1	537705	08/05/22 17:32	SAM	EETNC CAN

Laboratory References:

EETNC CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-170881-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_080122	~	~		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1395_080122	8/1/22	1305		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-232_080122		1420		X						6					N	G	X	X	X	X	X	X	X	
MW-2325_080122		1440		X						6					N	G	X	X	X	X	X	X	X	

240-170881 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Kraken Recovering RCW

Submit all results through Cadena at tomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
	ARCADIS	8/2/22 / 947		EETA	8/2/22 948
	EETA	8/2/22 950	Received in Laboratory by:	EETA	8/3/22 9:45 am

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8/9/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 170860**
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8/3/22 Opened on 8/3/22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 2.5 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Yes), and sample type of grab/comp (Yes)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 81042016	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

CK 8.3.22 8.3.22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

August 09, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 170881-1
Sample date: 2022-08-01
Report received by CADENA: 2022-08-09
Initial Data Verification completed by CADENA: 2022-08-09
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers and MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 170881-1

		Sample Name:	TRIP BLANK_42				MW-139S_080122				MW-232_080122				MW-232S_080122			
		Lab Sample ID:	2401708811				2401708812				2401708813				2401708814			
		Sample Date:	8/1/2022				8/1/2022				8/1/2022				8/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

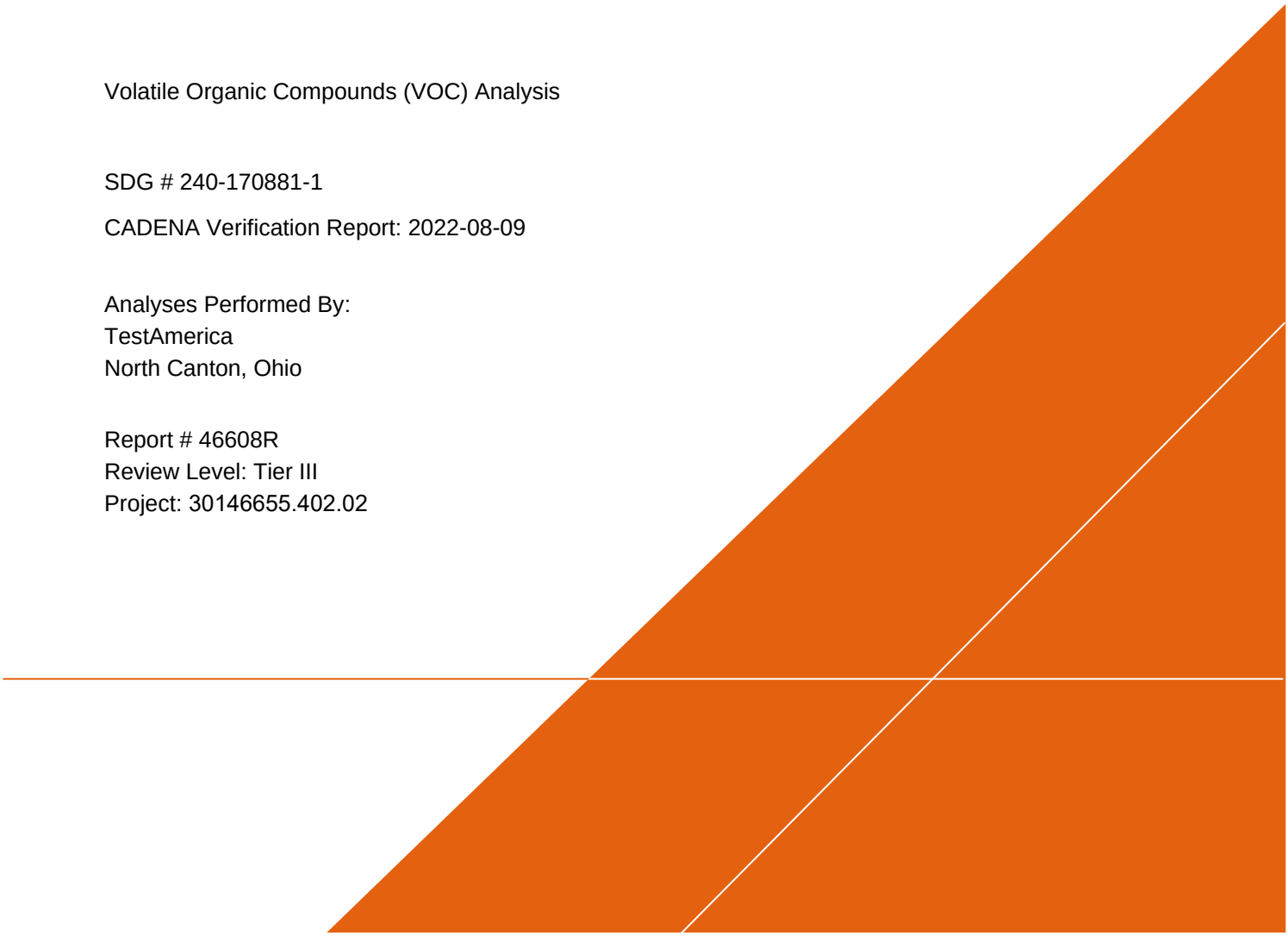
Volatile Organic Compounds (VOC) Analysis

SDG # 240-170881-1

CADENA Verification Report: 2022-08-09

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46608R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-170881-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_42	240-170881-1	Water	08/01/22		X	
MW-139S_080122	240-170881-2	Water	08/01/22		X	X
MW-232_080122	240-170881-3	Water	08/01/22		X	X
MW-232S_080122	240-170881-4	Water	08/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_42 MW-139S_080122 MW-232_080122 MW-232S_080122	Continuous Calibration Verification %D	Vinyl chloride	-24.2%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 12, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 13, 2022

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

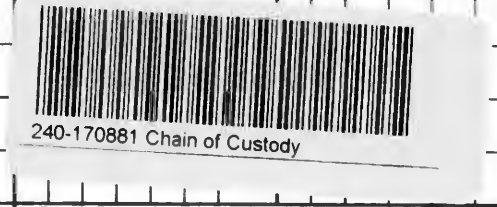
TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_(4)2	~	~		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1395_080122	8/1/22	1305		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-232_080122		1420		X						6					N	G	X	X	X	X	X	X	X	
MW-2325_080122		1440		X						6					N	G	X	X	X	X	X	X	X	



Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Beaver Woodbring Row
Submit all results through Cadena at jtomalia@cadenaca.com, Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christa Hart	Arcadis	8/1/22 1515	Novi Cold Storage	Arcadis	8/1/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/2/22 / 947	Jeri Hall	EETA	8/2/22 948
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EETA	8/2/22 950		EETA	8/3/22 9:45 am

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08/09/2022

Client Sample ID: TRIP BLANK_42

Lab Sample ID: 240-170881-1

Date Collected: 08/01/22 00:00
Date Received: 08/03/22 09:45

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 16:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 16:49	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/04/22 16:49*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/04/22 16:49*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/04/22 16:49*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*08/04/22 16:49*	*1*

Client Sample ID: MW-139S_080122

Lab Sample ID: 240-170881-2

Date Collected: 08/01/22 13:05
Date Received: 08/03/22 09:45

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 16:44*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:16	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/04/22 17:16*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/04/22 17:16*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*08/04/22 17:16*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*08/04/22 17:16*	*1*

Client Sample ID: MW-232_080122

Lab Sample ID: 240-170881-3

Date Collected: 08/01/22 14:00
Date Received: 08/03/22 09:45

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/05/22 17:08*	*1*

Client Sample ID: MW-232_080122
Lab Sample ID: 240-170881-3

Date Collected: 08/01/22 14:00
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 17:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 17:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 17:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 17:43	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/04/22 17:43*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*08/04/22 17:43*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/04/22 17:43*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*08/04/22 17:43*	*1*

Client Sample ID: MW-232S_080122
Lab Sample ID: 240-170881-4

Date Collected: 08/01/22 14:40
Matrix: Water
Date Received: 08/03/22 09:45

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/05/22 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/05/22 17:32*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/04/22 18:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/04/22 18:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/04/22 18:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/04/22 18:12	1
Vinyl chloride	1.0	~~U~~ UJ	1.0	0.45	ug/L			08/04/22 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/04/22 18:12*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/04/22 18:12*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/04/22 18:12*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*08/04/22 18:12*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171959-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
9/6/2022 8:01:49 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Job ID: 240-171959-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171959-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171959-1	TRIP BLANK_163	Water	08/19/22 00:00	08/23/22 09:30
240-171959-2	MW-140S_081922	Water	08/19/22 11:25	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Client Sample ID: TRIP BLANK_163 — Lab Sample ID: 240-171959-1

No Detections.

Client Sample ID: MW-140S_081922 — Lab Sample ID: 240-171959-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Client Sample ID: TRIP BLANK_163

Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171959-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 13:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 13:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 13:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 13:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/26/22 13:00*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/26/22 13:00*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/26/22 13:00*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/26/22 13:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Client Sample ID: MW-140S_081922
Date Collected: 08/19/22 11:25
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171959-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 06:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/27/22 06:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 13:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 13:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 13:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/26/22 13:25*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/26/22 13:25*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 13:25*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/26/22 13:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171959-1	TRIP BLANK_163	91	99	98	102
240-171959-2	MW-140S_081922	94	98	97	100
240-171965-H-5 MS	Matrix Spike	91	107	102	102
240-171965-N-5 MSD	Matrix Spike Duplicate	88	105	101	98
LCS 240-540299/5	Lab Control Sample	88	104	99	98
MB 240-540299/8	Method Blank	90	97	97	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171959-2	MW-140S_081922	74
240-171965-G-5 MS	Matrix Spike	83
240-171965-M-5 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
MB 240-540396/4	Method Blank	71

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540299/8
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/26/22 11:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/26/22 11:48*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 11:48*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 11:48*	*1*

Lab Sample ID: LCS 240-540299/5
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.6		ug/L		93	63 - 134
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	77 - 123
Tetrachloroethene	20.0	20.3		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	19.1		ug/L		95	75 - 124
Trichloroethene	20.0	19.2		ug/L		96	70 - 122
Vinyl chloride	20.0	20.9		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-171965-H-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	56 - 136
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	19.5		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171965-H-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171965-N-5 MSD
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	19.9		ug/L		100	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 136	3	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	4	15
Vinyl chloride	1.0	U	20.0	20.7		ug/L		103	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.61		ug/L		96	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-G-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-M-5 MSD
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

GC/MS VOA

Analysis Batch: 540299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171959-1	TRIP BLANK_163	Total/NA	Water	8260D	
240-171959-2	MW-140S_081922	Total/NA	Water	8260D	
MB 240-540299/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540299/5	Lab Control Sample	Total/NA	Water	8260D	
240-171965-H-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-171965-N-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171959-2	MW-140S_081922	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171965-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Client Sample ID: TRIP BLANK_163

Lab Sample ID: 240-171959-1

Date Collected: 08/19/22 00:00

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 13:00

Client Sample ID: MW-140S_081922

Lab Sample ID: 240-171959-2

Date Collected: 08/19/22 11:25

Matrix: Water

Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 13:25
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 06:43

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukerka	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_163	8/19/22	—		2						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-140s_081922	08/19/22	1125		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171959 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12067 Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time:
Sam Sukerka	Arcadis	08/19/22/1402	Arcadis cold stor	Arcadis	08/19/22/1402
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	8/22/22 1120		Eurofins	8/22/22 / 1120
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	Eurofins	8/22/22	Kaande Hart	EETMC	8/23/22 9:30

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9/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Handel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

September 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171959-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-06
Initial Data Verification completed by CADENA: 2022-09-06
Number of Samples:2
Sample Matrices: Water
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171959-1

		Sample Name:	TRIP BLANK_163				MW-140S_081922			
		Lab Sample ID:	2401719591				2401719592			
		Sample Date:	8/19/2022				8/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

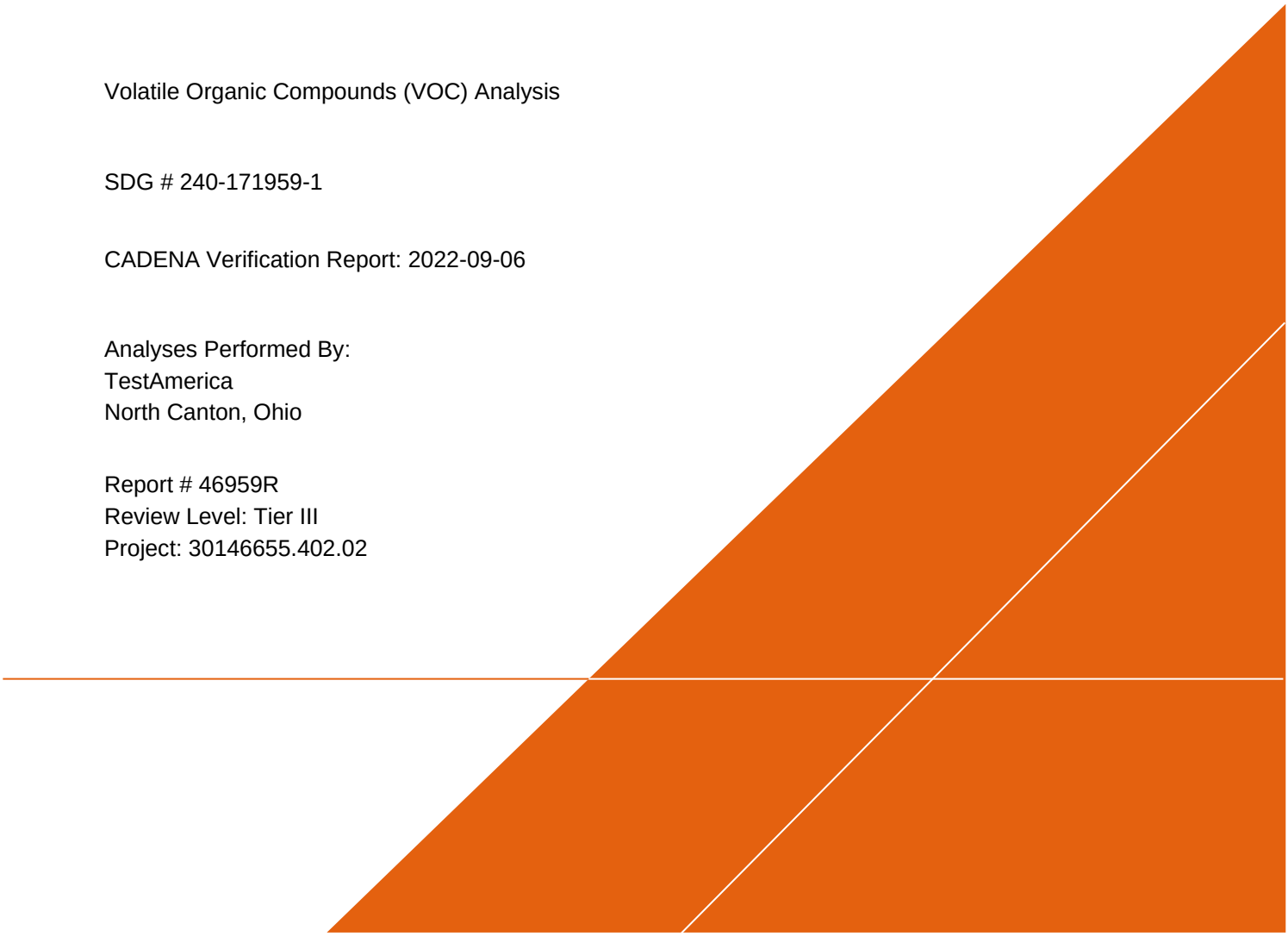
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171959-1

CADENA Verification Report: 2022-09-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46959R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171959-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_163	240-171959-1	Water	08/19/22		X	
MW-140S_081922	240-171959-2	Water	08/19/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: September 27, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 28, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Sam Sukerka	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day	
Project Number: 30080642.402.04	Shipping/Tracking No:		
PO # 30080642.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_163	8/19/22	—		2						2					N	G	X	X	X	X	X	X		1 Trip Blank
MW-140s_081922	08/19/22	1125		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171959 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12067 Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sam Sukerka	Arcadis	08/19/22/1402	Received by: Arcadis cold stor	Arcadis	08/19/22/1402
Relinquished by:	Arcadis	8/22/22 1120	Received by:	Eurofins	8/22/22 / 1120
Relinquished by:	Eurofins	8/22/22	Received in Laboratory by: Kaande Hardt	TEETNC	8/23/22 9:30

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9/6/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Client Sample ID: TRIP BLANK_163

Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171959-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 13:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 13:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 13:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 13:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/26/22 13:00*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*08/26/22 13:00*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/26/22 13:00*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/26/22 13:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171959-1

Client Sample ID: MW-140S_081922
Date Collected: 08/19/22 11:25
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171959-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 06:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/27/22 06:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 13:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 13:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 13:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 13:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/26/22 13:25*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/26/22 13:25*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 13:25*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/26/22 13:25*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171040-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/19/2022 11:37:27 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171040-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171040-1

Comments
No additional comments.

Receipt
The samples were received on 8/5/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7º C.

GC/MS VOA
Method 8260D: The matrix spike/matrix spike duplicate (MS/MSD) for samples TRIP BLANK_49 (240-171040-1), MW-231S_080322 (240-171040-2), MW-231_080322 (240-171040-3), MW-228_080322 (240-171040-4), MW-228S_080322 (240-171040-5) and MW-141S_080322 (240-171040-6) was not reported, because the analyte list for these samples did not match the analyte list for the MS/MSD parent sample.

Method 8260D SIM: An MS/MSD was set to analyze in 240-538297 however due to an auto-sampler malfunction it was not possible to analyze within tune time. The effected samples are MW-228S_080322 (240-171040-5) and MW-141S_080322 (240-171040-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171040-1	TRIP BLANK_49	Water	08/03/22 00:00	08/05/22 09:50
240-171040-2	MW-231S_080322	Water	08/03/22 09:05	08/05/22 09:50
240-171040-3	MW-231_080322	Water	08/03/22 09:50	08/05/22 09:50
240-171040-4	MW-228_080322	Water	08/03/22 10:45	08/05/22 09:50
240-171040-5	MW-228S_080322	Water	08/03/22 11:30	08/05/22 09:50
240-171040-6	MW-141S_080322	Water	08/03/22 12:25	08/05/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: TRIP BLANK_49 — Lab Sample ID: 240-171040-1

No Detections.

Client Sample ID: MW-231S_080322 — Lab Sample ID: 240-171040-2

No Detections.

Client Sample ID: MW-231_080322 — Lab Sample ID: 240-171040-3

No Detections.

Client Sample ID: MW-228_080322 — Lab Sample ID: 240-171040-4

No Detections.

Client Sample ID: MW-228S_080322 — Lab Sample ID: 240-171040-5

No Detections.

Client Sample ID: MW-141S_080322 — Lab Sample ID: 240-171040-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: TRIP BLANK_49
Date Collected: 08/03/22 00:00
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171040-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 19:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 19:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 19:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/09/22 19:29*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*08/09/22 19:29*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*08/09/22 19:29*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/09/22 19:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: MW-231S_080322
Date Collected: 08/03/22 09:05
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171040-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 20:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 20:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/09/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*08/09/22 19:52*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/09/22 19:52*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/09/22 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: MW-231_080322
Date Collected: 08/03/22 09:50
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171040-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 21:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 21:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 20:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 20:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 20:16*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/09/22 20:16*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/09/22 20:16*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/09/22 20:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: MW-228_080322
Date Collected: 08/03/22 10:45
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171040-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/09/22 21:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 20:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 20:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 20:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/09/22 20:39*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/09/22 20:39*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/09/22 20:39*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*08/09/22 20:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: MW-228S_080322
Date Collected: 08/03/22 11:30
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171040-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/10/22 12:40*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 21:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 21:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 21:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 21:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/09/22 21:02*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 21:02*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/09/22 21:02*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*08/09/22 21:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: MW-141S_080322
Date Collected: 08/03/22 12:25
Date Received: 08/05/22 09:50

Lab Sample ID: 240-171040-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 13:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 13:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 21:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 21:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 21:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 21:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/09/22 21:25*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 21:25*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 21:25*	*1*
Dibromofluoromethane (Surr)	*117*		*73 - 120*		*08/09/22 21:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171040-1	TRIP BLANK_49	97	82	88	107
240-171040-2	MW-231S_080322	99	80	87	106
240-171040-3	MW-231_080322	101	86	91	110
240-171040-4	MW-228_080322	104	84	90	115
240-171040-5	MW-228S_080322	107	87	94	115
240-171040-6	MW-141S_080322	107	87	93	117
LCS 240-538105/5	Lab Control Sample	96	94	92	107
MB 240-538105/8	Method Blank	101	92	93	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171040-2	MW-231S_080322	86
240-171040-3	MW-231_080322	86
240-171040-4	MW-228_080322	82
240-171040-4 MS	MW-228_080322	81
240-171040-4 MSD	MW-228_080322	87
240-171040-5	MW-228S_080322	83
240-171040-6	MW-141S_080322	80
LCS 240-538123/4	Lab Control Sample	87
LCS 240-538297/4	Lab Control Sample	81
MB 240-538123/6	Method Blank	85
MB 240-538297/6	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538105/8
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 12:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 12:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/09/22 12:58*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 12:58*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/09/22 12:58*	*1*

Lab Sample ID: LCS 240-538105/5
Matrix: Water
Analysis Batch: 538105

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	20.0	19.3		ug/L		97	77 - 123
Tetrachloroethene	20.0	21.3		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	18.2		ug/L		91	75 - 124
Trichloroethene	20.0	20.5		ug/L		103	70 - 122
Vinyl chloride	20.0	18.1		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538123/6
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 13:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/09/22 13:17*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-538123/4
Matrix: Water
Analysis Batch: 538123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-171040-4 MS
Matrix: Water
Analysis Batch: 538123

Client Sample ID: MW-228_080322
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-171040-4 MSD
Matrix: Water
Analysis Batch: 538123

Client Sample ID: MW-228_080322
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: MB 240-538297/6
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 12:16*	*1*

Lab Sample ID: LCS 240-538297/4
Matrix: Water
Analysis Batch: 538297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.9		ug/L		109	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

GC/MS VOA

Analysis Batch: 538105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171040-1	TRIP BLANK_49	Total/NA	Water	8260D	
240-171040-2	MW-231S_080322	Total/NA	Water	8260D	
240-171040-3	MW-231_080322	Total/NA	Water	8260D	
240-171040-4	MW-228_080322	Total/NA	Water	8260D	
240-171040-5	MW-228S_080322	Total/NA	Water	8260D	
240-171040-6	MW-141S_080322	Total/NA	Water	8260D	
MB 240-538105/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538105/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 538123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171040-2	MW-231S_080322	Total/NA	Water	8260D SIM	
240-171040-3	MW-231_080322	Total/NA	Water	8260D SIM	
240-171040-4	MW-228_080322	Total/NA	Water	8260D SIM	
MB 240-538123/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538123/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171040-4 MS	MW-228_080322	Total/NA	Water	8260D SIM	
240-171040-4 MSD	MW-228_080322	Total/NA	Water	8260D SIM	

Analysis Batch: 538297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171040-5	MW-228S_080322	Total/NA	Water	8260D SIM	
240-171040-6	MW-141S_080322	Total/NA	Water	8260D SIM	
MB 240-538297/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538297/4	Lab Control Sample	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Client Sample ID: TRIP BLANK_49
Lab Sample ID: 240-171040-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 19:29

Client Sample ID: MW-231S_080322
Lab Sample ID: 240-171040-2
Date Collected: 08/03/22 09:05
Matrix: Water
Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 19:52
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 20:47

Client Sample ID: MW-231_080322
Lab Sample ID: 240-171040-3
Date Collected: 08/03/22 09:50
Matrix: Water
Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 20:16
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 21:11

Client Sample ID: MW-228_080322
Lab Sample ID: 240-171040-4
Date Collected: 08/03/22 10:45
Matrix: Water
Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 20:39
Total/NA	Analysis	8260D SIM		1	538123	SAM	EET CAN	08/09/22 21:34

Client Sample ID: MW-228S_080322
Lab Sample ID: 240-171040-5
Date Collected: 08/03/22 11:30
Matrix: Water
Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 21:02
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 12:40

Client Sample ID: MW-141S_080322
Lab Sample ID: 240-171040-6
Date Collected: 08/03/22 12:25
Matrix: Water
Date Received: 08/05/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538105	AJS	EET CAN	08/09/22 21:25
Total/NA	Analysis	8260D SIM		1	538297	SAM	EET CAN	08/10/22 13:04

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171040-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Gamboa	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 49	~~8/3/22~~	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-23IS_080322	8/3/22	405								6							X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-23I_080322		950								6							X	X	X	X	X	X	X	
MW-22S_080322		1045								6							X	X	X	X	X	X	X	
MW-22SS_080322		1130								6							X	X	X	X	X	X	X	
MW-14IS_080322	—	1225		—						6					—	—	X	X	X	X	X	Y	X	

240-171040 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples): ☐ Return to Client ☑ Disposal By Lab

Special Instructions/QC Requirements & Comments:

Sample Address: Richland/Laurel/Boston Post Road

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Gamboa	Arcadis	8/3/22 1530	Novi Cold storage	Arcadis	8/3/22 1530
Relinquished by:	Company:	Date/Time:	Received by	Company:	Date/Time:
[illegible]	Arcadis	8/4/22 1250	Lilly McC	EEMA	8/4/22
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Lilly McC	EEMA	8/4/22	Mandalay Blue	eeMC	8-5-22 9:50

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8/19/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171040
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Marilyn Blee

Cooler Received on 8-5-22 Opened on 8-5-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.1 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

August 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171040-1
Sample date: 2022-08-03
Report received by CADENA: 2022-08-19
Initial Data Verification completed by CADENA: 2022-08-19
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171040-1

		Sample Name:	TRIP BLANK_49				MW-231S_080322				MW-231_080322				MW-228_080322				MW-228S_080322				MW-141S_080322			
		Lab Sample ID:	2401710401				2401710402				2401710403				2401710404				2401710405				2401710406			
		Sample Date:	8/3/2022				8/3/2022				8/3/2022				8/3/2022				8/3/2022				8/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																									
OSW-8260D																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

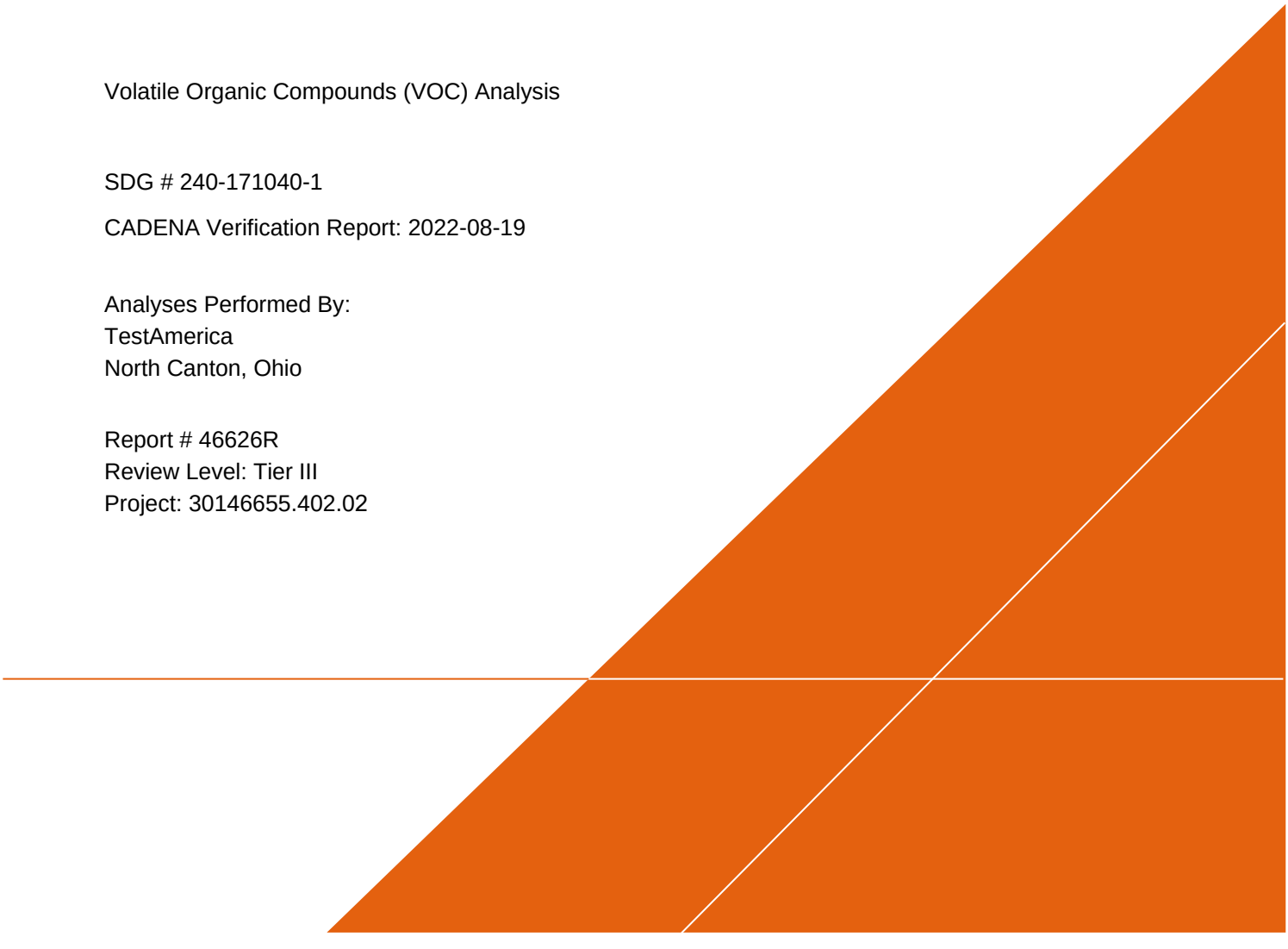
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171040-1

CADENA Verification Report: 2022-08-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46626R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171040-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_49	240-171040-1	Water	08/03/22		X	
MW-231S_080322	240-171040-2	Water	08/03/22		X	X
MW-231_080322	240-171040-3	Water	08/03/22		X	X
MW-228_080322	240-171040-4	Water	08/03/22		X	X
MW-228S_080322	240-171040-5	Water	08/03/22		X	X
MW-141S_080322	240-171040-6	Water	08/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 14, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Granado	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30080642.402.04				
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_49	8/3/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-23S_080322	8/3/22	905								6							X	X	X	X	X	X	X	3 VOAs for 8260D
MW-23I_080322		950								6							X	X	X	X	X	X	X	3 VOAs for 8260D SIM
MW-22S_080322		1045								6							X	X	X	X	X	X	X	
MW-22SS_080322		1130								6							X	X	X	X	X	X	X	
MW-14IS_080322	—	1215		—						6					—	—	X	X	X	X	X	Y	X	

240-171040 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples : ☐ Return to Client ☑ Disposal By Lab

Special Instructions/QC Requirements & Comments:

Sample Address: Richland/Laurel/Boston Post Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Granado	Arcadis	8/3/22 1510	Novi cold storage	Arcadis	8/3/22 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/4/22 1250	Cdy Mc	EEA	8/4/22
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Cdy Mc	EEA	8/4/22	Mandaly Blue	TAMC	8-5-22 9:50

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08/19/2022

Client Sample ID: TRIP BLANK_49
Lab Sample ID: 240-171040-1
Date Collected: 08/03/22 00:00
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 19:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 19:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 19:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/09/22 19:29*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*08/09/22 19:29*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*08/09/22 19:29*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/09/22 19:29*	*1*

Client Sample ID: MW-231S_080322
Lab Sample ID: 240-171040-2
Date Collected: 08/03/22 09:05
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 20:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 20:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/09/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*08/09/22 19:52*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*08/09/22 19:52*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/09/22 19:52*	*1*

Client Sample ID: MW-231_080322
Lab Sample ID: 240-171040-3
Date Collected: 08/03/22 09:50
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 21:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/09/22 21:11*	*1*

Client Sample ID: MW-231_080322
Lab Sample ID: 240-171040-3
Date Collected: 08/03/22 09:50
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 20:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 20:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/09/22 20:16*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/09/22 20:16*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/09/22 20:16*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*08/09/22 20:16*	*1*

Client Sample ID: MW-228_080322
Lab Sample ID: 240-171040-4
Date Collected: 08/03/22 10:45
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/09/22 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*08/09/22 21:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 20:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 20:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 20:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 20:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*08/09/22 20:39*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/09/22 20:39*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*08/09/22 20:39*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*08/09/22 20:39*	*1*

Client Sample ID: MW-228S_080322
Lab Sample ID: 240-171040-5
Date Collected: 08/03/22 11:30
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*08/10/22 12:40*	*1*

Client Sample ID: MW-228S_080322
Lab Sample ID: 240-171040-5
Date Collected: 08/03/22 11:30
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 21:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 21:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 21:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 21:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/09/22 21:02*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 21:02*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/09/22 21:02*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*08/09/22 21:02*	*1*

Client Sample ID: MW-141S_080322
Lab Sample ID: 240-171040-6
Date Collected: 08/03/22 12:25
Matrix: Water
Date Received: 08/05/22 09:50

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/10/22 13:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/10/22 13:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/09/22 21:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/09/22 21:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/09/22 21:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/09/22 21:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/09/22 21:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/09/22 21:25*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/09/22 21:25*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/09/22 21:25*	*1*
Dibromofluoromethane (Surr)	*117*		*73 - 120*		*08/09/22 21:25*	*1*

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171280-1
Client Project/Site: Ford LTP - Off Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

[redacted]

Authorized for release by:
8/22/2022 4:09:54 PM
Opal Johnson, Project Manager II
(330)966-9279
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Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Job ID: 240-171280-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171280-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171280-1	TRIP BLANK_66	Water	08/05/22 00:00	08/10/22 11:43
240-171280-2	MW-192S_080522	Water	08/05/22 15:10	08/10/22 11:43

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Client Sample ID: TRIP BLANK_66 — Lab Sample ID: 240-171280-1

No Detections.

Client Sample ID: MW-192S_080522 — Lab Sample ID: 240-171280-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Client Sample ID: TRIP BLANK_66
Date Collected: 08/05/22 00:00
Date Received: 08/10/22 11:43

Lab Sample ID: 240-171280-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/11/22 18:58*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/11/22 18:58*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 18:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/11/22 18:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Client Sample ID: MW-192S_080522
Date Collected: 08/05/22 15:10
Date Received: 08/10/22 11:43

Lab Sample ID: 240-171280-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 21:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 19:22*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/11/22 19:22*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 19:22*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 19:22*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-17 MS	Matrix Spike	93	90	102	103
240-171141-B-17 MSD	Matrix Spike Duplicate	97	91	101	106
240-171280-1	TRIP BLANK_66	94	85	95	101
240-171280-2	MW-192S_080522	93	84	95	100
LCS 240-538489/8	Lab Control Sample	90	86	96	99
MB 240-538489/9	Method Blank	90	83	94	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171280-2	MW-192S_080522	86
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538489/9
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/11/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/11/22 13:39*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 13:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/11/22 13:39*	*1*

Lab Sample ID: LCS 240-538489/8
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.4		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	77 - 123
Tetrachloroethene	20.0	17.6		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	250	226		ug/L		90	56 - 135
cis-1,2-Dichloroethene	13		250	249		ug/L		94	66 - 128
Tetrachloroethene	690	F1	250	867	E	ug/L		70	62 - 131
trans-1,2-Dichloroethene	13	U	250	214		ug/L		85	56 - 136
Trichloroethene	14		250	245		ug/L		92	61 - 124
Vinyl chloride	13	U	250	212		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MSD
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	229		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	13		250	265		ug/L		101	66 - 128	6	14
Tetrachloroethene	690	F1	250	844	E F1	ug/L		61	62 - 131	3	20
trans-1,2-Dichloroethene	13	U	250	223		ug/L		89	56 - 136	4	15
Trichloroethene	14		250	255		ug/L		96	61 - 124	4	15
Vinyl chloride	13	U	250	216		ug/L		86	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

GC/MS VOA

Analysis Batch: 538489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171280-1	TRIP BLANK_66	Total/NA	Water	8260D	
240-171280-2	MW-192S_080522	Total/NA	Water	8260D	
MB 240-538489/9	Method Blank	Total/NA	Water	8260D	
LCS 240-538489/8	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-17 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171280-2	MW-192S_080522	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Client Sample ID: TRIP BLANK_66

Lab Sample ID: 240-171280-1

Date Collected: 08/05/22 00:00

Matrix: Water

Date Received: 08/10/22 11:43

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 18:58

Client Sample ID: MW-192S_080522

Lab Sample ID: 240-171280-2

Date Collected: 08/05/22 15:10

Matrix: Water

Date Received: 08/10/22 11:43

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 19:22
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/14/22 21:42

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-171280-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

CHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAcet NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_66	8/5/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1925_080522	8/5/22	1510		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171280 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12036 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	8/5/22 1610	Arcadis Cold Storage	Arcadis	8/5/22 1610
	Arcadis	8/9/22 1410	Jen Hall	EEA	8/9/22 1411
Jen Hall	EEA	8/9/22 1446	Mandy Bla	EEA	8/10/22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 9-10-22 Opened on 9-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30080642.402.04
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171280-1
Sample date: 2022-08-05
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171280-1

		Sample Name:	TRIP BLANK_66				MW-192S_080522			
		Lab Sample ID:	2401712801				2401712802			
		Sample Date:	8/5/2022				8/5/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

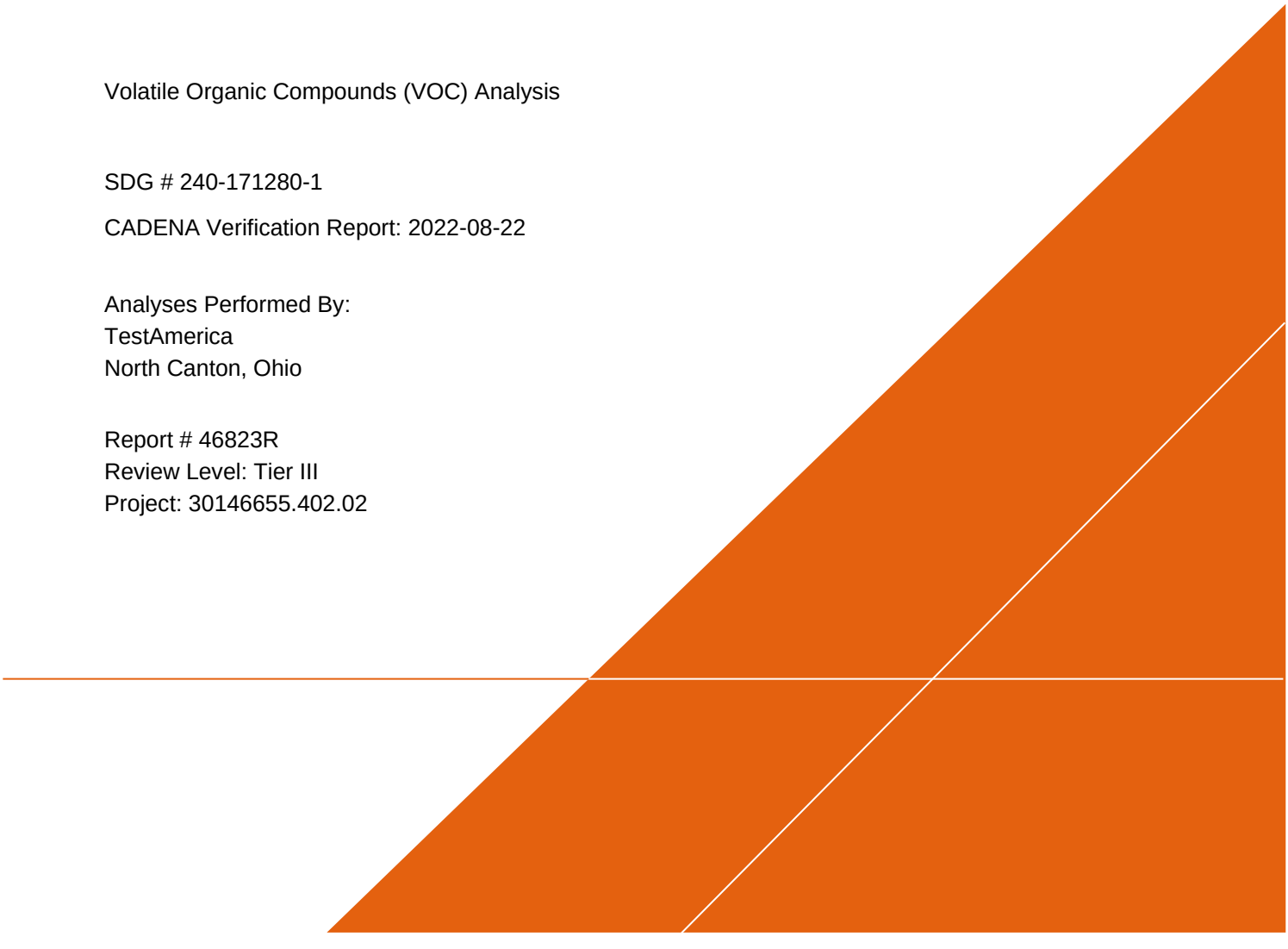
Volatile Organic Compounds (VOC) Analysis

SDG # 240-171280-1

CADENA Verification Report: 2022-08-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 46823R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-171280-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_66	240-171280-1	Water	08/05/22		X	
MW-192S_080522	240-171280-2	Water	08/05/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: September 19, 2022

PEER REVIEW: Andrew Korycinski

DATE: September 20, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

CHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks; 10 day ☑ 2 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM				Sample Specific Notes / Special Instructions:
TRIP BLANK_66	8/5/22	—		X						1					N	G	X	X	X	X	X	X					1 Trip Blank
MW-1925_080522	8/5/22	1510		X						6					N	G	X	X	X	X	X	X	X				3 VOAs for 8260D 3 VOAs for 8260D SIM

240-171280 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12036 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	8/5/22/1610	Arcadis Cold Storage	Arcadis	8/5/22/1610
[signature]	Arcadis	8/9/22 1410	[signature]	EEA	8/9/22 1411
[signature]	EEA	8/9/22 1446	[signature]	EEA	8/10/22 9:30

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08/22/2022

Client Sample ID: TRIP BLANK_66
Lab Sample ID: 240-171280-1
Date Collected: 08/05/22 00:00
Matrix: Water
Date Received: 08/10/22 11:43

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/11/22 18:58*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/11/22 18:58*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 18:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/11/22 18:58*	*1*

Client Sample ID: MW-192S_080522
Lab Sample ID: 240-171280-2
Date Collected: 08/05/22 15:10
Matrix: Water
Date Received: 08/10/22 11:43

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 21:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/11/22 19:22*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/11/22 19:22*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 19:22*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 19:22*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/6/2022 2:23:52 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176834-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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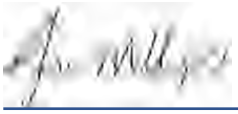

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176834-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176834-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176834-1	TRIP BLANK_177	Water	11/16/22 00:00	11/19/22 08:00
240-176834-2	MW-94S_111622	Water	11/16/22 11:31	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Client Sample ID: TRIP BLANK_177 — Lab Sample ID: 240-176834-1

No Detections.

Client Sample ID: MW-94S_111622 — Lab Sample ID: 240-176834-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Client Sample ID: TRIP BLANK_177

Date Collected: 11/16/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176834-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 22:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 22:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 22:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 22:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 22:27*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/28/22 22:27*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/22 22:27*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/28/22 22:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Client Sample ID: MW-94S_111622

Date Collected: 11/16/22 11:31
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176834-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 20:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/28/22 20:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 01:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 01:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 01:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 01:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 01:49*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 01:49*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 01:49*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 01:49*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176834-1	TRIP BLANK_177	91	98	103	97
240-176834-2	MW-94S_111622	92	100	104	99
240-176837-F-2 MS	Matrix Spike	83	100	105	97
240-176837-F-2 MSD	Matrix Spike Duplicate	83	100	104	97
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176834-2	MW-94S_111622	94
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176834-2	MW-94S_111622	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176834-1	TRIP BLANK_177	Total/NA	Water	8260D	
240-176834-2	MW-94S_111622	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176837-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Client Sample ID: TRIP BLANK_177

Lab Sample ID: 240-176834-1

Date Collected: 11/16/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/28/22 22:27

Client Sample ID: MW-94S_111622

Lab Sample ID: 240-176834-2

Date Collected: 11/16/22 11:31

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 01:49
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 20:08

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_177	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-945_111622	11/16/22	11:31		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176834 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11680 Boston Rst

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1615	Navy Cold Storage	Arcadis	11/17/22 1615
[signature]	ARCADIS	11/18/22 0945	[signature]	EET	11/18/22 0945
[signature]	EET	11-18-22 1002	Received in Laboratory by: M. [signature]	Company: [signature]	Date/Time: 11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. A. A.

Cooler Received on 11/19/22 Opened on 11/19/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) 11.21.22
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176834-1
Sample date: 2022-11-16
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176834-1

		Sample Name:	TRIP BLANK_177				MW-94S_111622			
		Lab Sample ID:	2401768341				2401768342			
		Sample Date:	11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

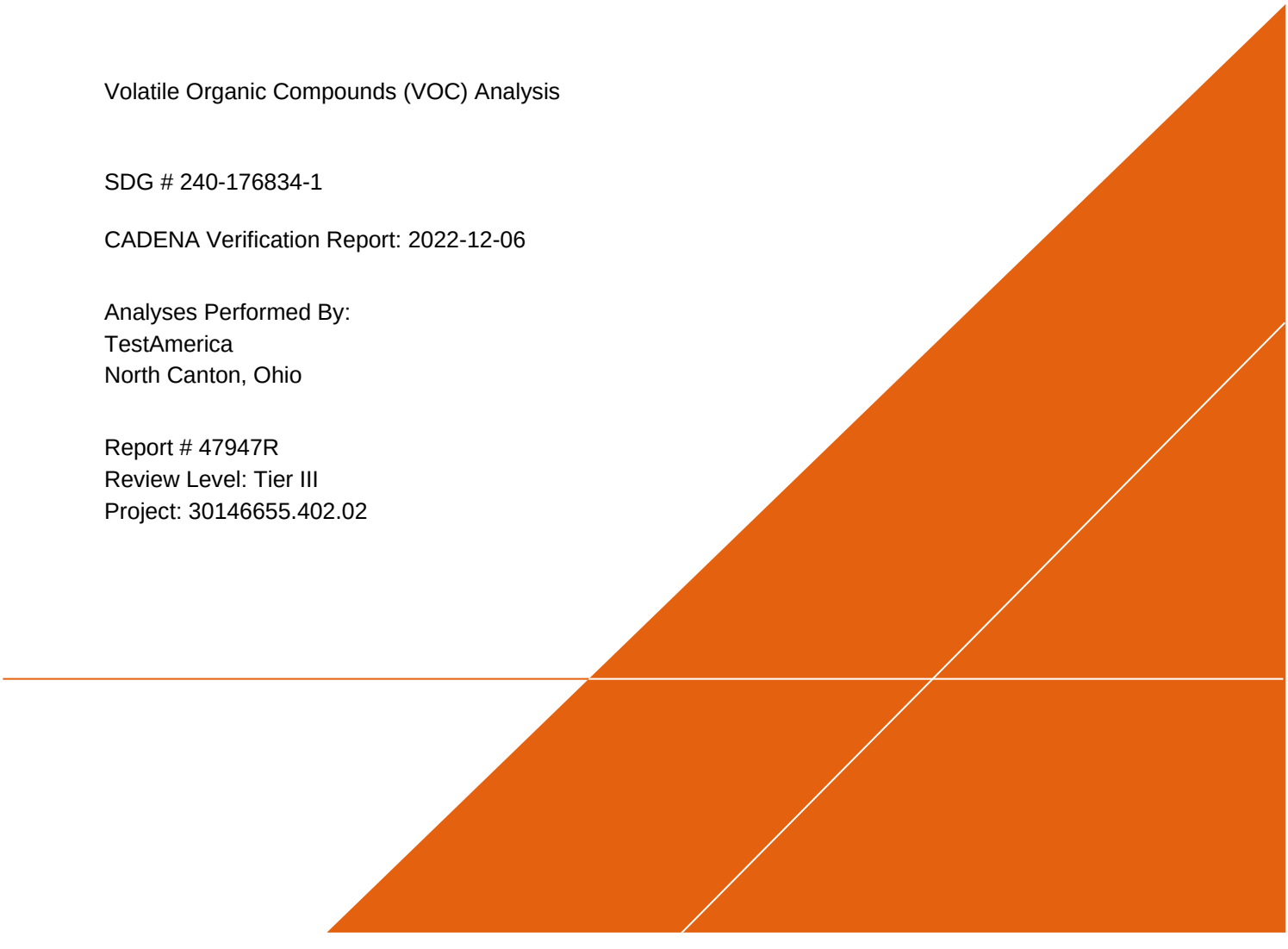
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176834-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47947R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176834-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_177	240-176834-1	Water	11/16/22		X	
MW-94S_111622	240-176834-2	Water	11/16/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_177 MW-94S_111622	Initial Calibration Verification %D	1,1-Dichloroethene	30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Initial / Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Initial / Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 15, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 177	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-945_111622	11/16/22	11:31		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 11680 Boston Rd
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Gary Schafer	Arcadis	11/17/22	1615	Received by: Navy Cold Storage	Arcadis	11/17/22 1615
Relinquished by:	ARCADIS	11/18/22	0945	Received by:	EETul	11/18/22 0945
Relinquished by: Jeri Hall	EETul	11-18-22	1002	Received in Laboratory by: M. [illegible]	[illegible]	11/19/22 8:00

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12/6/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Client Sample ID: TRIP BLANK_177

Date Collected: 11/16/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176834-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 22:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 22:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 22:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 22:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 22:27*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/28/22 22:27*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/22 22:27*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/28/22 22:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176834-1

Client Sample ID: MW-94S_111622

Date Collected: 11/16/22 11:31
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176834-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 20:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*11/28/22 20:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 01:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 01:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 01:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 01:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 01:49*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 01:49*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 01:49*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 01:49*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176838-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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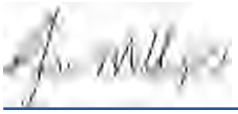

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Job ID: 240-176838-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176838-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176838-1	TRIP BLANK_175	Water	11/16/22 00:00	11/19/22 08:00
240-176838-2	MW-172S_111622	Water	11/16/22 13:16	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Client Sample ID: TRIP BLANK_175 — Lab Sample ID: 240-176838-1

No Detections.

Client Sample ID: MW-172S_111622 — Lab Sample ID: 240-176838-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Client Sample ID: TRIP BLANK_175

Date Collected: 11/16/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176838-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 00:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 00:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 00:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 00:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/29/22 00:08*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/22 00:08*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 00:08*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 00:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Client Sample ID: MW-172S_111622
Date Collected: 11/16/22 13:16
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176838-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 21:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/28/22 21:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 04:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 04:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 04:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 04:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 04:22*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 04:22*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/22 04:22*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 04:22*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176837-F-2 MS	Matrix Spike	83	100	105	97
240-176837-F-2 MSD	Matrix Spike Duplicate	83	100	104	97
240-176838-1	TRIP BLANK_175	90	97	101	97
240-176838-2	MW-172S_111622	91	98	102	98
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176838-2	MW-172S_111622	95
240-176838-2 MS	MW-172S_111622	98
240-176838-2 MSD	MW-172S_111622	102
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: MW-172S_111622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: MW-172S_111622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176838-2	MW-172S_111622	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-2 MS	MW-172S_111622	Total/NA	Water	8260D SIM	
240-176838-2 MSD	MW-172S_111622	Total/NA	Water	8260D SIM	

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176838-1	TRIP BLANK_175	Total/NA	Water	8260D	
240-176838-2	MW-172S_111622	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176837-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Client Sample ID: TRIP BLANK_175

Lab Sample ID: 240-176838-1

Date Collected: 11/16/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 00:08

Client Sample ID: MW-172S_111622

Lab Sample ID: 240-176838-2

Date Collected: 11/16/22 13:16

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 04:22
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 21:45

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 175	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1725_111622	11/16/22	1316		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176838 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11701 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1617	Novi Cold storage	Arcadis	11/17/22 1617
	ARCADIS	11/18/22 0945		EEA	11/18/22 0945
J. Heal	EEA	11-18-22 1002	Received in Laboratory by: M. [illegible]	Company: EEC	Date/Time: 11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176838
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. D. D.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) 11-21-22
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042016 (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176838-1
Sample date: 2022-11-16
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176838-1

		Sample Name:	TRIP BLANK_175				MW-172S_111622			
		Lab Sample ID:	2401768381				2401768382			
		Sample Date:	11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176838-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47915R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176838-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_175	240-176838-1	Water	11/16/2022		X	
MW-172S_111622	240-176838-2	Water	11/16/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_175 MW-172S_111622	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 12, 2022

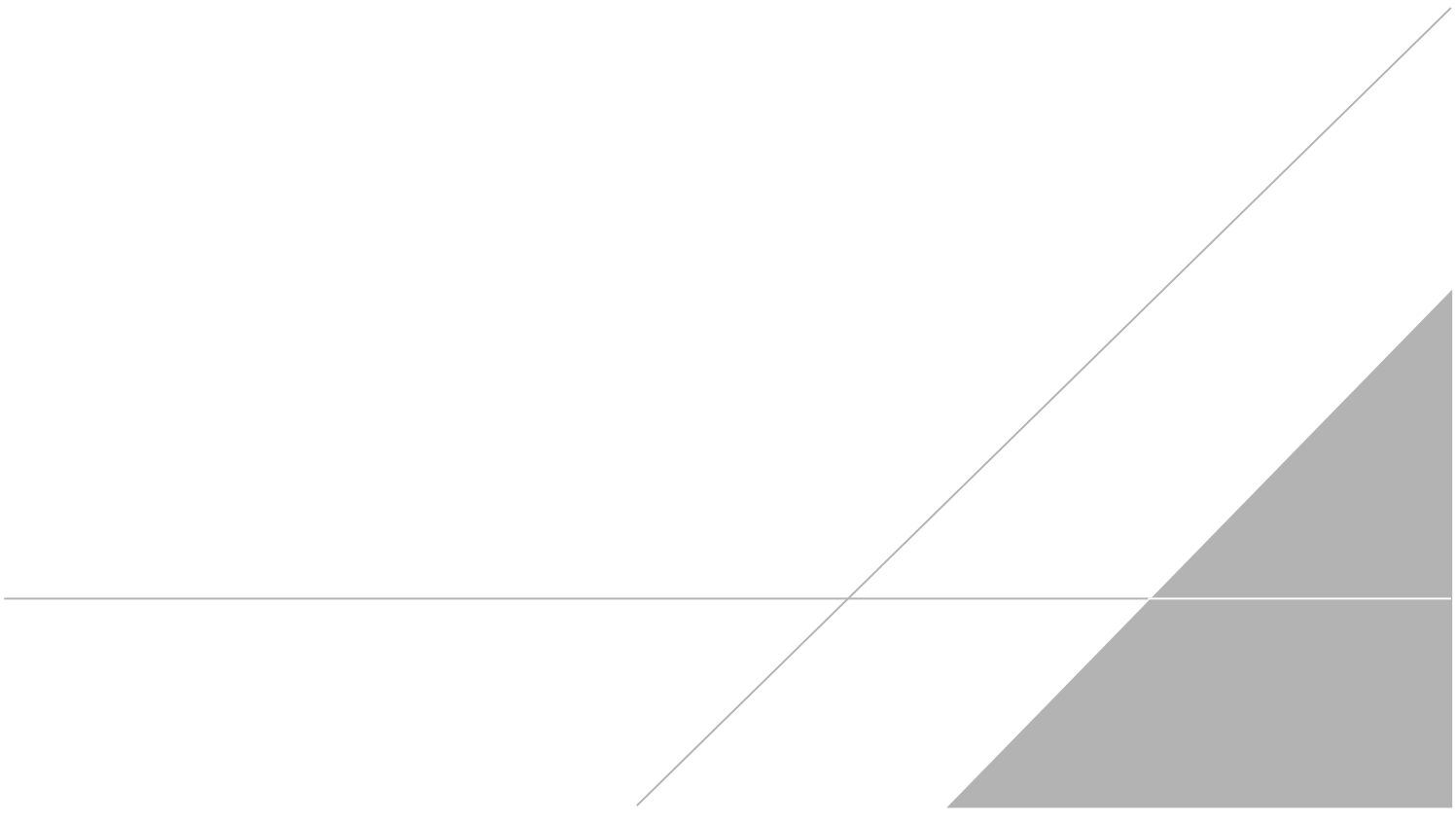
PEER REVIEW: Andrew Korycinski

DATE: December 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 175	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1725_111622	11/16/22	1316		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification: Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client, Disposal By Lab, Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11701 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1617	Novi Cold storage	Arcadis	11/17/22 1617
	ARCADIS	11/18/22 0945		EEA	11/18/22 0945
J. Heal	EEA	11-18-22 1002	Received in Laboratory by: M. X.	EEC	11/19/22 8:00

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12/6/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Client Sample ID: TRIP BLANK_175

Date Collected: 11/16/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176838-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 00:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 00:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 00:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 00:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/29/22 00:08*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/22 00:08*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 00:08*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 00:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176838-1

Client Sample ID: MW-172S_111622
Date Collected: 11/16/22 13:16
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176838-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 21:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*11/28/22 21:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 04:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 04:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 04:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 04:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 04:22*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 04:22*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/22 04:22*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 04:22*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:52:22 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176069-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176069-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176069-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176069-1	TRIP BLANK_102	Water	11/07/22 00:00	11/09/22 09:45
240-176069-2	MW-121S_110722	Water	11/07/22 14:28	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Client Sample ID: TRIP BLANK_102 — Lab Sample ID: 240-176069-1

No Detections.

Client Sample ID: MW-121S_110722 — Lab Sample ID: 240-176069-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Client Sample ID: TRIP BLANK_102
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176069-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/22 19:48*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/16/22 19:48*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 19:48*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/16/22 19:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Client Sample ID: MW-121S_110722
Date Collected: 11/07/22 14:28
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176069-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/15/22 15:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 17:33*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 17:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 17:33*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 17:33*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176036-F-4 MS	Matrix Spike	91	90	94	92
240-176036-F-4 MSD	Matrix Spike Duplicate	93	92	97	92
240-176069-1	TRIP BLANK_102	98	80	94	99
240-176069-2	MW-121S_110722	94	93	100	102
240-176069-2 MS	MW-121S_110722	86	92	99	92
240-176069-2 MSD	MW-121S_110722	85	90	99	93
LCS 240-552188/5	Lab Control Sample	89	86	93	91
LCS 240-552229/5	Lab Control Sample	84	92	100	93
MB 240-552188/8	Method Blank	96	84	94	97
MB 240-552229/8	Method Blank	90	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176069-2	MW-121S_110722	92
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552188/8
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/22 11:48*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/16/22 11:48*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 11:48*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/22 11:48*	*1*

Lab Sample ID: LCS 240-552188/5
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.2		ug/L		91	63 - 134
cis-1,2-Dichloroethene	20.0	18.0		ug/L		90	77 - 123
Tetrachloroethene	20.0	20.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
Trichloroethene	20.0	19.1		ug/L		96	70 - 122
Vinyl chloride	20.0	17.0		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176036-F-4 MS
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	6.3	U	125	105		ug/L		84	56 - 135
cis-1,2-Dichloroethene	43		125	163		ug/L		96	66 - 128
Tetrachloroethene	6.3	U	125	113		ug/L		91	62 - 131
trans-1,2-Dichloroethene	6.3	U	125	104		ug/L		83	56 - 136
Trichloroethene	6.3	U	125	110		ug/L		88	61 - 124
Vinyl chloride	94		125	189		ug/L		76	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176036-F-4 MS
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176036-F-4 MSD
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	6.3	U	125	108		ug/L		86	56 - 135	3	26
cis-1,2-Dichloroethene	43		125	161		ug/L		94	66 - 128	1	14
Tetrachloroethene	6.3	U	125	124		ug/L		99	62 - 131	9	20
trans-1,2-Dichloroethene	6.3	U	125	108		ug/L		87	56 - 136	4	15
Trichloroethene	6.3	U	125	116		ug/L		93	61 - 124	6	15
Vinyl chloride	94		125	203		ug/L		87	43 - 157	7	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		62 - 137		11/16/22 13:35	1
4-Bromofluorobenzene (Surr)	90		56 - 136		11/16/22 13:35	1
Toluene-d8 (Surr)	98		78 - 122		11/16/22 13:35	1
Dibromofluoromethane (Surr)	100		73 - 120		11/16/22 13:35	1

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	26.0		ug/L		104	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: MW-121S_110722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128		
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136		
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124		
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-176069-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: MW-121S_110722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/15/22 09:20*	*1*

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176069-2	MW-121S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176069-1	TRIP BLANK_102	Total/NA	Water	8260D	
MB 240-552188/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552188/5	Lab Control Sample	Total/NA	Water	8260D	
240-176036-F-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176036-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176069-2	MW-121S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-2 MS	MW-121S_110722	Total/NA	Water	8260D	
240-176069-2 MSD	MW-121S_110722	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Client Sample ID: TRIP BLANK_102

Lab Sample ID: 240-176069-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552188	AJS	EET CAN	11/16/22 19:48

Client Sample ID: MW-121S_110722

Lab Sample ID: 240-176069-2

Date Collected: 11/07/22 14:28

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 17:33
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 15:04

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176069-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
a TRIP BLANK_102	11/7/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
a MW-1215_110722	11/7/22	14:28		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176069 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

11710 Boston Post St

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/7/22 16:10	Iodvl cold storage	Arcadis	11/7/22 16:10
	ARCADIS	11/8/22 0915		EETA	11/8/22 0915
Teri Hale	EETA	11-8-22 943	Received in Laboratory by:	EETDC	11-9-22 945

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176067
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.9.22 Opened on 11.9.22

Cooler unpacked by: Danny Rogers

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286777
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION
Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 1716069

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Angela Gard, Project Management Assistant II
Angela.Gard@et.eurofinsus.com
Designee for
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176069-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176069-1

		Sample Name:	TRIP BLANK_102				MW-121S_110722			
		Lab Sample ID:	2401760691				2401760692			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

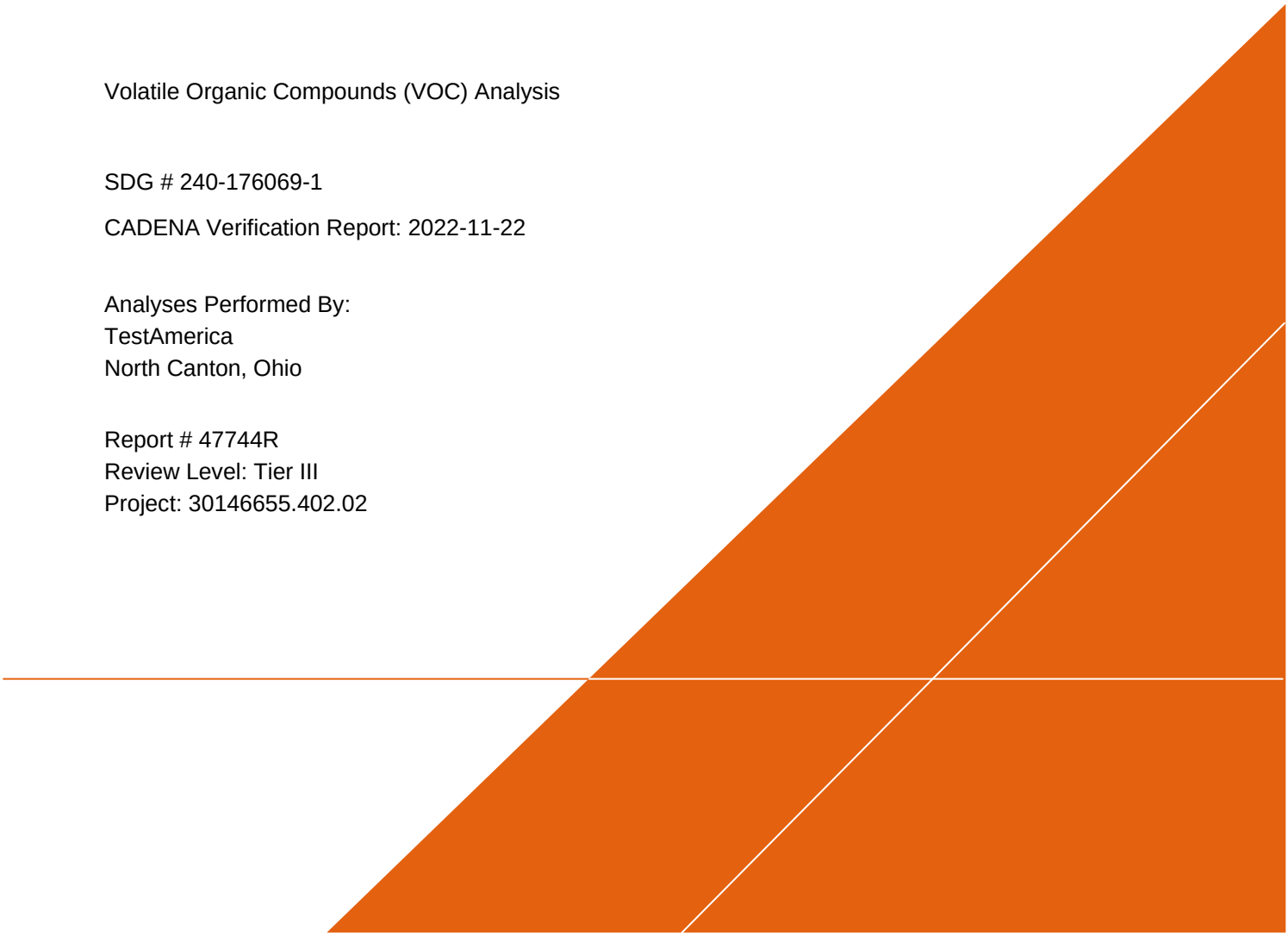
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176069-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47744R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176069-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_102	240-176069-1	Water	11/07/22		X	
MW-121S_110722	240-176069-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 30, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client; Lab sampling; Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_102	11/7/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-121S_110722	11/7/22	14:28		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176069 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

11710 BOSTON POST ST.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/7/22 16:10	NOVI cold storage	Arcadis	11/7/22 16:10
	ARCADIS	11/8/22 0915		EETA	11/8/22 0915
Teri Hall	EETA	11-8-22 943		EETDC	11-9-22 945

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Client Sample ID: TRIP BLANK_102
Lab Sample ID: 240-176069-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/22 19:48*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/16/22 19:48*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 19:48*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/16/22 19:48*	*1*

Client Sample ID: MW-121S_110722
Lab Sample ID: 240-176069-2
Date Collected: 11/07/22 14:28
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*11/15/22 15:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 17:33*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 17:33*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 17:33*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 17:33*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/6/2022 2:08:57 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176832-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Eurofins Canton

Job Notes

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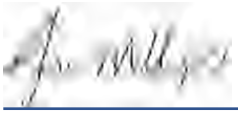
Authorization



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Job ID: 240-176832-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176832-1

Comments
No additional comments.

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1º C.

GC/MS VOA
Method 8260D SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-173S_111622 (240-176832-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176832-1	TRIP BLANK_178	Water	11/16/22 00:00	11/19/22 08:00
240-176832-2	MW-173S_111622	Water	11/16/22 14:51	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Client Sample ID: TRIP BLANK_178 — Lab Sample ID: 240-176832-1

No Detections.

Client Sample ID: MW-173S_111622 — Lab Sample ID: 240-176832-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Client Sample ID: TRIP BLANK_178

Date Collected: 11/16/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176832-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 21:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 21:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 21:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 21:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/28/22 21:36*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/28/22 21:36*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/22 21:36*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/28/22 21:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Client Sample ID: MW-173S_111622
Date Collected: 11/16/22 14:51
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176832-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*		*11/30/22 22:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 00:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 00:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 00:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 00:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/29/22 00:59*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 00:59*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 00:59*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 00:59*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176832-1	TRIP BLANK_178	90	100	103	96
240-176832-2	MW-173S_111622	93	100	103	99
240-176837-F-2 MS	Matrix Spike	83	100	105	97
240-176837-F-2 MSD	Matrix Spike Duplicate	83	100	104	97
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176832-2	MW-173S_111622	121 S1+
240-177069-E-6 MS	Matrix Spike	97
240-177069-E-6 MSD	Matrix Spike Duplicate	105
LCS 240-554036/4	Lab Control Sample	108
MB 240-554036/5	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-554036/5
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/22 21:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/30/22 21:51*	*1*

Lab Sample ID: LCS 240-554036/4
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.75		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*

Lab Sample ID: 240-177069-E-6 MS
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-177069-E-6 MSD
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

GC/MS VOA

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176832-1	TRIP BLANK_178	Total/NA	Water	8260D	
240-176832-2	MW-173S_111622	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176837-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 554036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176832-2	MW-173S_111622	Total/NA	Water	8260D SIM	
MB 240-554036/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-554036/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-177069-E-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-177069-E-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Client Sample ID: TRIP BLANK_178

Lab Sample ID: 240-176832-1

Date Collected: 11/16/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/28/22 21:36

Client Sample ID: MW-173S_111622

Lab Sample ID: 240-176832-2

Date Collected: 11/16/22 14:51

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 00:59
Total/NA	Analysis	8260D SIM		1	554036	CS	EET CAN	11/30/22 22:40

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 178	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-173S-111622	11/16/22	1451		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176832 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11721 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1618	Novi Cold Storage	Arcadis	11/17/22 1618
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945	J. Hall	EEGA	11/18/22 0945
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
J. Hall	EEGA	11-18-22 1002	M	EEC	11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176832
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. A. A.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No 11/21/22
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176832-1
Sample date: 2022-11-16
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM sample -002 surrogate recovery outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176832-1

		Sample Name:	TRIP BLANK_178				MW-173S_111622			
		Lab Sample ID:	2401768321				2401768322			
		Sample Date:	11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

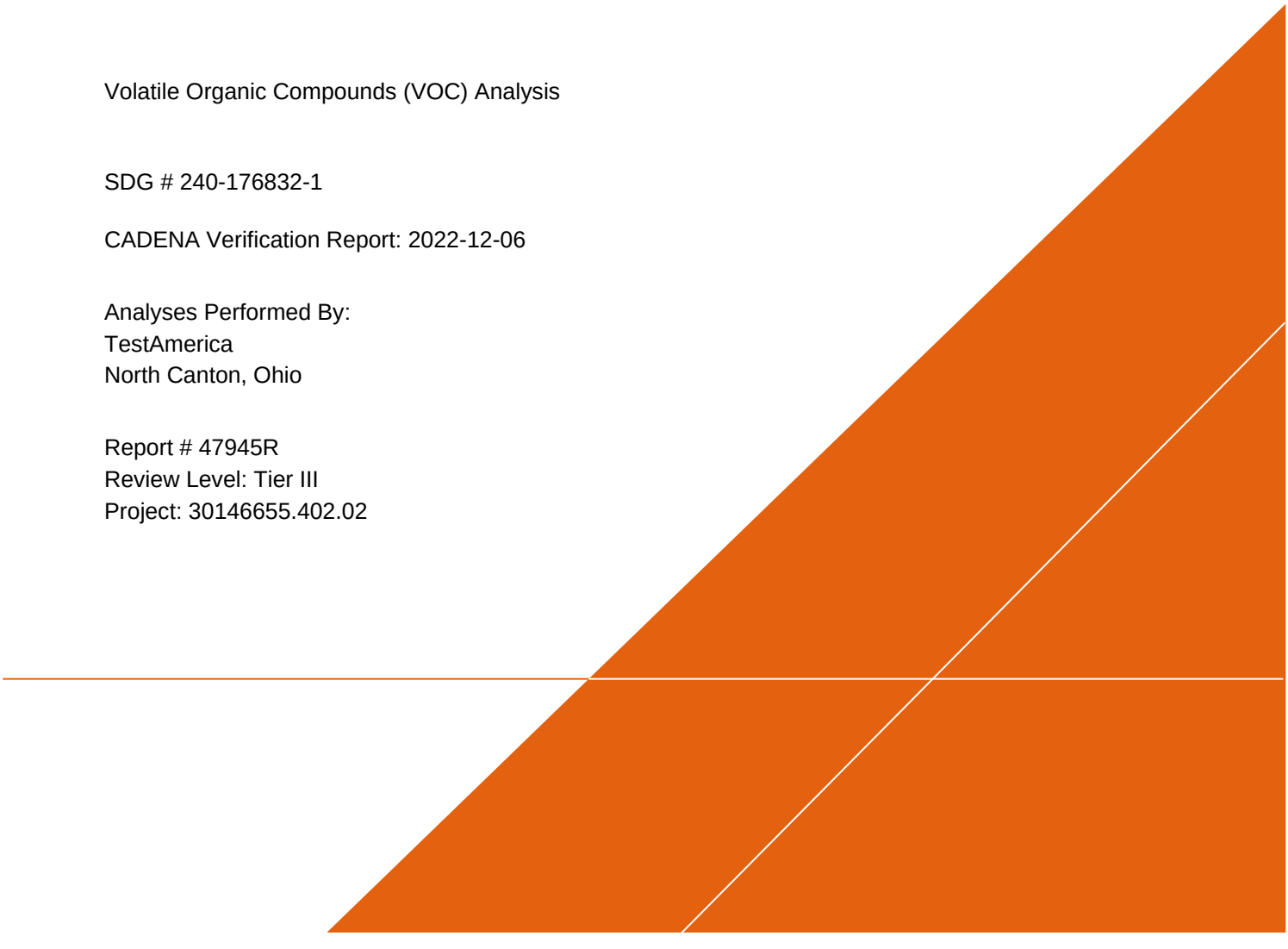
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176832-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47945R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176832-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_178	240-176832-1	Water	11/16/22		X	
MW-173S_111622	240-176832-2	Water	11/16/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_178 MW-173S_111622	Initial Calibration Verification %D	1,1-Dichloroethene	30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Initial / Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Initial / Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 15, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks (✓), 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 178	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-173S-111622	11/16/22	1451		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176832 Chain of Custody

Possible Hazard Identification: Non-Hazard (✓) Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client Disposal By Lab (✓) Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11721 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1618	Novi Cold Storage	Arcadis	11/17/22 1618
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945	J. Hall	EEGA	11/18/22 0945
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
J. Hall	EEGA	11-18-22 1002	M	EEC	11/19/22 8:00

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12/6/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Client Sample ID: TRIP BLANK_178

Date Collected: 11/16/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176832-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 21:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 21:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 21:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 21:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/28/22 21:36*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/28/22 21:36*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/22 21:36*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/28/22 21:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176832-1

Client Sample ID: MW-173S_111622
Date Collected: 11/16/22 14:51
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176832-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*		*11/30/22 22:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 00:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 00:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 00:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 00:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/29/22 00:59*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 00:59*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 00:59*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 00:59*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:16:08 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176241-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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11/29/2022 8:16:08 AM

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(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176241-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176241-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
Method 8260D: An MS/MSD was done in 240-552226 however it was not acquired by the data system due to an instrument error. The effected sample is TRIP BLANK_81 (240-176241-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176241-1	TRIP BLANK_81	Water	11/09/22 00:00	11/11/22 08:00
240-176241-2	MW-93S_110922	Water	11/09/22 11:50	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Client Sample ID: TRIP BLANK_81 — Lab Sample ID: 240-176241-1

No Detections.

Client Sample ID: MW-93S_110922 — Lab Sample ID: 240-176241-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Client Sample ID: TRIP BLANK_81
Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176241-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/16/22 15:46*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/16/22 15:46*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 15:46*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/16/22 15:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Client Sample ID: MW-93S_110922
Date Collected: 11/09/22 11:50
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176241-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 02:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 02:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/17/22 15:43*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/17/22 15:43*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/17/22 15:43*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/17/22 15:43*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176241-1	TRIP BLANK_81	102	79	94	98
240-176241-2	MW-93S_110922	107	76	92	103
240-176249-A-3 MSD	Matrix Spike Duplicate	91	98	97	94
240-176249-D-3 MS	Matrix Spike	97	99	97	95
LCS 240-552226/5	Lab Control Sample	93	96	99	95
LCS 240-552226/6	Lab Control Sample	90	91	94	89
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552226/8	Method Blank	100	82	94	96
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176241-2	MW-93S_110922	79
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552226/8
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/16/22 14:05*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/16/22 14:05*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 14:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/22 14:05*	*1*

Lab Sample ID: LCS 240-552226/5
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.7		ug/L		107	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	12.5	10.2		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: LCS 240-552226/6
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.0		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			25.0	26.0		ug/L		104	77 - 123		
Tetrachloroethene			25.0	25.1		ug/L		101	76 - 123		
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	75 - 124		
Trichloroethene			25.0	24.3		ug/L		97	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-D-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane			10.0	8.84		ug/L		88	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

GC/MS VOA

Analysis Batch: 552226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176241-1	TRIP BLANK_81	Total/NA	Water	8260D	
MB 240-552226/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552226/5	Lab Control Sample	Total/NA	Water	8260D	
LCS 240-552226/6	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176241-2	MW-93S_110922	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176249-D-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176241-2	MW-93S_110922	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Client Sample ID: TRIP BLANK_81

Lab Sample ID: 240-176241-1

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552226	SAM	EET CAN	11/16/22 15:46

Client Sample ID: MW-93S_110922

Lab Sample ID: 240-176241-2

Date Collected: 11/09/22 11:50

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 15:43
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 02:40

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176241-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

1.2/1.2

Chain of Custody Record

2.4/24

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_801	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-935 - 110922	11/9/22	11:50		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176241 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

11775 Boston Post

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/9/22 13:25	Novi cold storage	Arcadis	11/9/22 13:25
	ARCADIS	11/10/22 1515		TEKNA	11/10/22 1515
			Received in Laboratory by:	EETNC	11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176241
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-11-22 Opened on 11-11-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity leak Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login # : 176241

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176241-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176241-1

		Sample Name:	TRIP BLANK_81				MW-93S_110922			
		Lab Sample ID:	2401762411				2401762412			
		Sample Date:	11/9/2022				11/9/2022			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

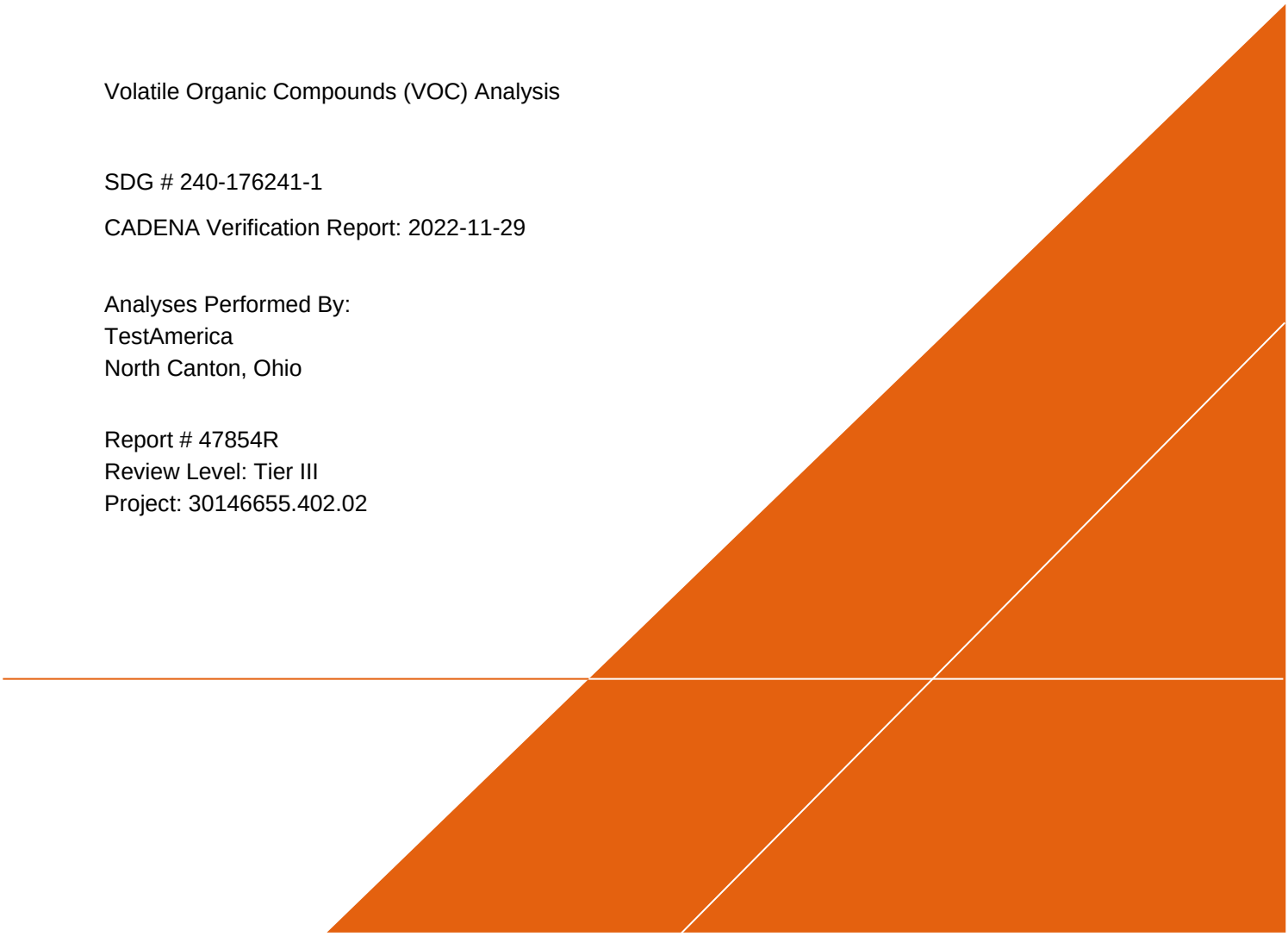
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176241-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47854R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176241-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_81	240-176241-1	Water	11/09/22		X	
MW-93S_110922	240-176241-2	Water	11/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

1.2/1.2

Chain of Custody Record

2.4/24

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Kris Hinskey	Christina Weaver	Mike DelMonico	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377		Email: kristoffer.hinskey@arcadis.com			
Phone: 248-994-2240		Sampler Name: Samantha Szpaichler	Analysis Turnaround Time		For lab use only
Project Name: Ford LTP Off-Site		Method of Shipment/Carrier:	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client / Lab sampling
Project Number: 30146655.402.04		Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_801	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-935_110922	11/9/22	11:50		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176241 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

11775 Boston Post

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/9/22 13 25	NOVI cold storage	Arcadis	11/9/22 13:25
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		EEN	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETNC	11-11-22 800

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Client Sample ID: TRIP BLANK_81
Lab Sample ID: 240-176241-1

Date Collected: 11/09/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/16/22 15:46*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/16/22 15:46*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 15:46*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/16/22 15:46*	*1*

Client Sample ID: MW-93S_110922
Lab Sample ID: 240-176241-2

Date Collected: 11/09/22 11:50
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 02:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 02:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/17/22 15:43*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/17/22 15:43*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/17/22 15:43*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/17/22 15:43*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:16:49 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176242-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/29/2022 8:16:49 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176242-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176242-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
Method 8260D: An MS/MSD was done in 240-552226 however it was not acquired by the data system due to an instrument error. The effected sample is TRIP BLANK_141 (240-176242-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176242-1	TRIP BLANK_141	Water	11/08/22 00:00	11/11/22 08:00
240-176242-2	MW-176S_110822	Water	11/08/22 14:40	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Client Sample ID: TRIP BLANK_141 — Lab Sample ID: 240-176242-1

No Detections.

Client Sample ID: MW-176S_110822 — Lab Sample ID: 240-176242-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Client Sample ID: TRIP BLANK_141
Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176242-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 16:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 16:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 16:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/16/22 16:11*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/16/22 16:11*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/16/22 16:11*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/16/22 16:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Client Sample ID: MW-176S_110822
Date Collected: 11/08/22 14:40
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176242-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 03:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 03:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/17/22 16:08*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 16:08*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/17/22 16:08*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/17/22 16:08*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176242-1	TRIP BLANK_141	104	78	93	99
240-176242-2	MW-176S_110822	106	78	94	102
240-176249-A-3 MSD	Matrix Spike Duplicate	91	98	97	94
240-176249-D-3 MS	Matrix Spike	97	99	97	95
LCS 240-552226/5	Lab Control Sample	93	96	99	95
LCS 240-552226/6	Lab Control Sample	90	91	94	89
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552226/8	Method Blank	100	82	94	96
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176242-2	MW-176S_110822	80
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552226/8
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/16/22 14:05*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/16/22 14:05*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 14:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/22 14:05*	*1*

Lab Sample ID: LCS 240-552226/5
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.7		ug/L		107	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	12.5	10.2		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: LCS 240-552226/6
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.0		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			25.0	26.0		ug/L		104	77 - 123		
Tetrachloroethene			25.0	25.1		ug/L		101	76 - 123		
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	75 - 124		
Trichloroethene			25.0	24.3		ug/L		97	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-D-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane			10.0	8.84		ug/L		88	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

GC/MS VOA

Analysis Batch: 552226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176242-1	TRIP BLANK_141	Total/NA	Water	8260D	
MB 240-552226/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552226/5	Lab Control Sample	Total/NA	Water	8260D	
LCS 240-552226/6	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176242-2	MW-176S_110822	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176249-D-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176242-2	MW-176S_110822	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Client Sample ID: TRIP BLANK_141

Lab Sample ID: 240-176242-1

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552226	SAM	EET CAN	11/16/22 16:11

Client Sample ID: MW-176S_110822

Lab Sample ID: 240-176242-2

Date Collected: 11/08/22 14:40

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 16:08
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 03:05

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176242-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_141	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-176S_110822	11/8/22	14:40		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176242 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be ass... ned longer than 1 month): ☐ Return to Client ☑ Disposal By Lab Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

11845 Boston Post

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/8/22 15:45	NOVI cold storage	Arcadis	11/8/22 15:45
	ARCADIS	11/10/22 1515		EEN	11/10/22 1515
			Received in Laboratory by:	EETMC	11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176242
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-11-22 Opened on 11-11-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? — Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? — Yes No
11. Sufficient quantity received to perform indicated analyses? — Yes No
12. Are these work share samples and all listed on the COC? — Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? — Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. — Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none — Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WT-NC-099

Login # : 176242

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176242-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176242-1

		Sample Name:	TRIP BLANK_141				MW-176S_110822			
		Lab Sample ID:	2401762421				2401762422			
		Sample Date:	11/8/2022				11/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

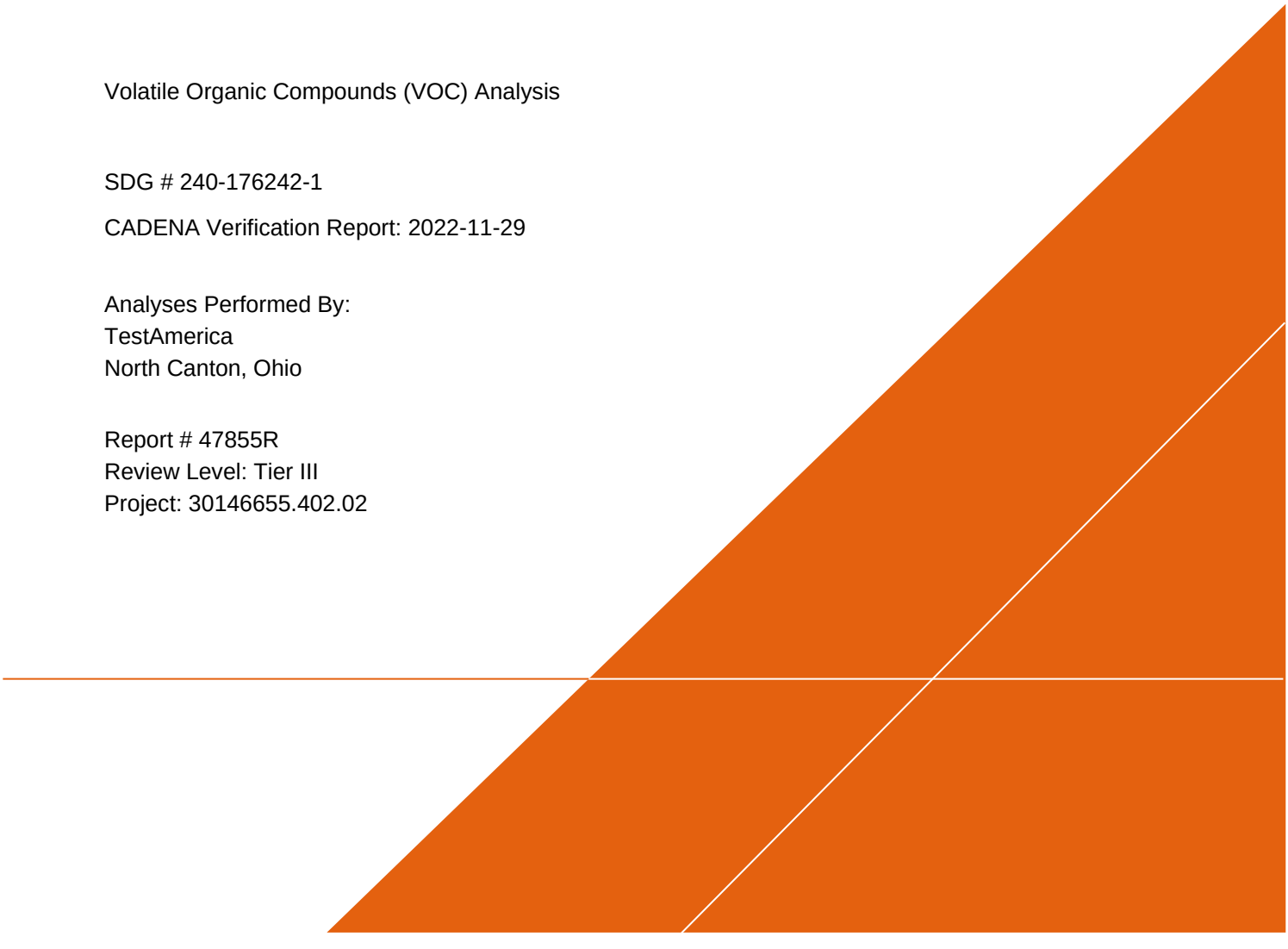
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176242-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47855R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176242-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_141	240-176242-1	Water	11/08/22		X	
MW-176S_110822	240-176242-2	Water	11/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_141	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-176S_110822	11/8/22	14:40		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be ass... ned longer than 1 month): ☐ Return to Client ☑ Disposal By Lab Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 11845 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/8/22 15:45	NOVI cold storage	Arcadis	11/8/22 15:45
	ARCADIS	11/10/22 1515		EEXA	11/10/22 1515
			Received in Laboratory by:	EETNC	11-11-22 800

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Client Sample ID: TRIP BLANK_141
Lab Sample ID: 240-176242-1
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 16:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 16:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 16:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/16/22 16:11*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/16/22 16:11*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/16/22 16:11*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/16/22 16:11*	*1*

Client Sample ID: MW-176S_110822
Lab Sample ID: 240-176242-2
Date Collected: 11/08/22 14:40
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 03:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 03:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/17/22 16:08*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 16:08*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/17/22 16:08*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/17/22 16:08*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/30/2022 3:50:52 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176714-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/30/2022 3:50:52 PM

Authorized for release by
Opal Johnson, Project Manager II
Opal.Johnson@et.eurofinsus.com
Designee for
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176714-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176714-1

Receipt
The samples were received on 11/18/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176714-1	TRIP BLANK_200	Water	11/16/22 00:00	11/18/22 08:00
240-176714-2	MW-178S_111622	Water	11/16/22 09:33	11/18/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Client Sample ID: TRIP BLANK_200 — Lab Sample ID: 240-176714-1

No Detections.

Client Sample ID: MW-178S_111622 — Lab Sample ID: 240-176714-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Client Sample ID: TRIP BLANK_200
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176714-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 19:54*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 19:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 19:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 19:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Client Sample ID: MW-178S_111622
Date Collected: 11/16/22 09:33
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176714-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 00:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/28/22 00:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 20:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 20:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 20:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 20:20*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 20:20*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 20:20*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/28/22 20:20*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176712-B-3 MS	Matrix Spike	97	91	98	91
240-176712-B-3 MSD	Matrix Spike Duplicate	97	92	98	93
240-176714-1	TRIP BLANK_200	100	87	99	90
240-176714-2	MW-178S_111622	100	87	99	88
LCS 240-553589/4	Lab Control Sample	92	91	97	94
MB 240-553589/7	Method Blank	96	90	99	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176714-2	MW-178S_111622	104
240-176715-C-2 MS	Matrix Spike	109
240-176715-C-2 MSD	Matrix Spike Duplicate	113
LCS 240-553481/3	Lab Control Sample	98
MB 240-553481/4	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553589/7
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 14:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 14:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 14:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 14:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/28/22 14:54*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/28/22 14:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 14:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 14:54*	*1*

Lab Sample ID: LCS 240-553589/4
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.7		ug/L		99	76 - 123
trans-1,2-Dichloroethene	25.0	23.6		ug/L		95	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	12.5	10.1		ug/L		81	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10	U	250	207		ug/L		83	56 - 135
cis-1,2-Dichloroethene	370		250	599		ug/L		91	66 - 128
Tetrachloroethene	10	U	250	207		ug/L		83	62 - 131
trans-1,2-Dichloroethene	110		250	358		ug/L		98	56 - 136
Trichloroethene	590		250	885	E	ug/L		118	61 - 124
Vinyl chloride	10	U	125	91.1		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MSD
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	229		ug/L		91	56 - 135	10	26
cis-1,2-Dichloroethene	370		250	603		ug/L		93	66 - 128	1	14
Tetrachloroethene	10	U	250	217		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	110		250	356		ug/L		97	56 - 136	1	15
Trichloroethene	590		250	816	E	ug/L		90	61 - 124	8	15
Vinyl chloride	10	U	125	104		ug/L		83	43 - 157	13	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553481/4
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553481/3
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.78		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176715-C-2 MS
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176715-C-2 MSD
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

GC/MS VOA

Analysis Batch: 553481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176714-2	MW-178S_111622	Total/NA	Water	8260D SIM	
MB 240-553481/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553481/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176715-C-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176715-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176714-1	TRIP BLANK_200	Total/NA	Water	8260D	
240-176714-2	MW-178S_111622	Total/NA	Water	8260D	
MB 240-553589/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553589/4	Lab Control Sample	Total/NA	Water	8260D	
240-176712-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-176712-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Client Sample ID: TRIP BLANK_200

Lab Sample ID: 240-176714-1

Date Collected: 11/16/22 00:00

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 19:54

Client Sample ID: MW-178S_111622

Lab Sample ID: 240-176714-2

Date Collected: 11/16/22 09:33

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 20:20
Total/NA	Analysis	8260D SIM		1	553481	CS	EET CAN	11/28/22 00:09

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 120

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehria Ferreira	TAT if different from below: 10 day ☑ 2 weeks ☐ 3 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
6	TRIP BLANK_200	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
7	MW-1785-111622	11/16/22	09:33		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176714 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 11850 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehria Ferreira	Arcadis	11/16/22 14:10	Pace Cold Storage	Arcadis	11/16/22 14:10
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/17/22 0935		EEA	11/17/22 0935
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/17/22 941		EEC	11/18/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. D. D.

Cooler Received on 11/18/22 Opened on 11/18/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176714-1
Sample date: 2022-11-16
Report received by CADENA: 2022-11-30
Initial Data Verification completed by CADENA: 2022-11-30
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176714-1

		Sample Name:	TRIP BLANK_200				MW-178S_111622			
		Lab Sample ID:	2401767141				2401767142			
		Sample Date:	11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

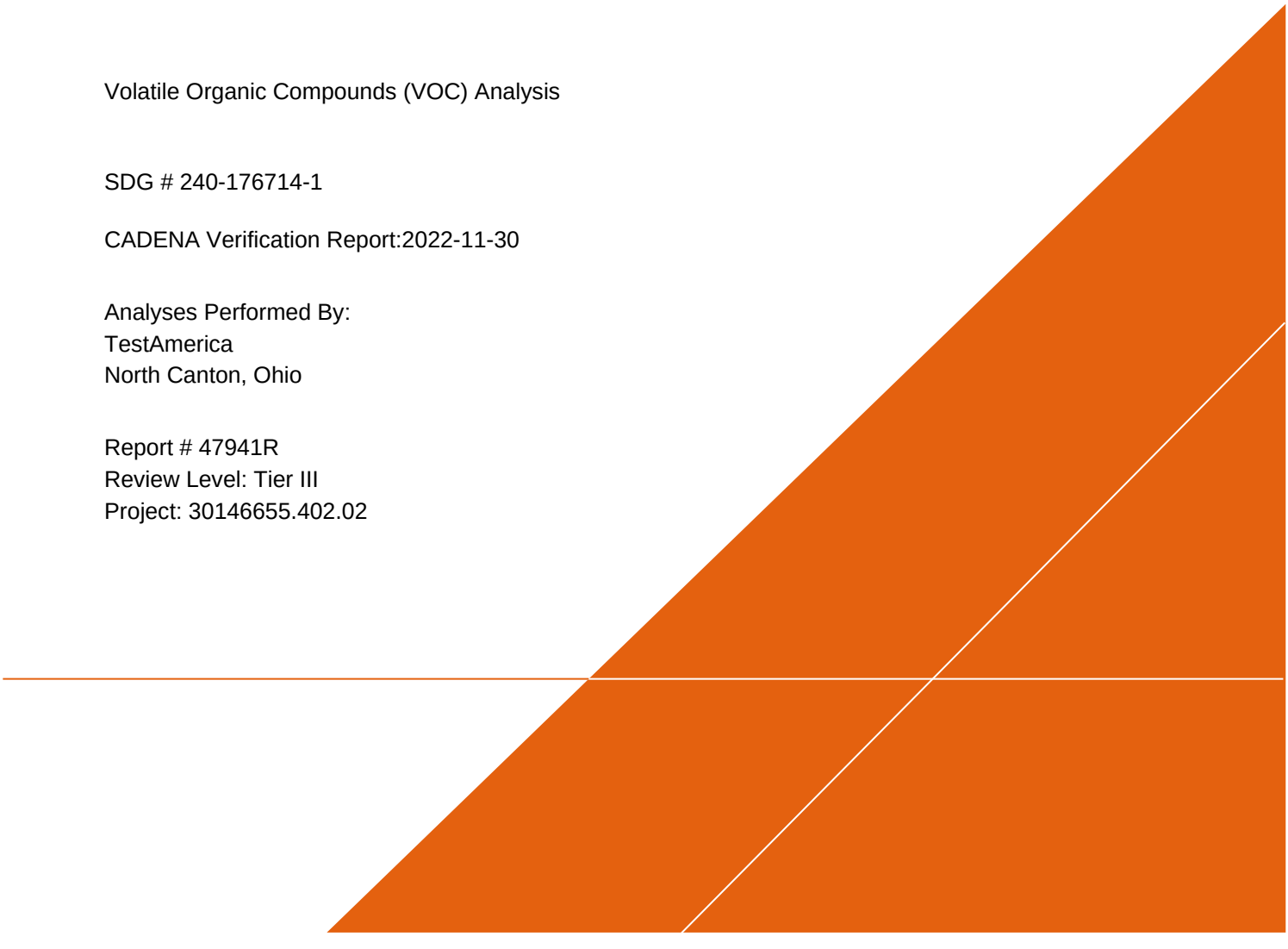
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176714-1

CADENA Verification Report:2022-11-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47941R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176714-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_200	240-176714-1	Water	11/16/22		X	
MW-178S_111622	240-176714-2	Water	11/16/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 120

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehria Ferreira	TAT if different from below: 10 day ☑ 2 weeks ☐ 3 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
6	TRIP BLANK_200	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
7	MW-1785-111622	11/16/22	09:33		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176714 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 11850 Boston Post
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehria Ferreira	Arcadis	11/16/22 14:10	Pour Cold Storage	Arcadis	11/16/22 14:10
	ARCADIS	11/17/22 0935		EEA	11/17/22 0935
	EEA	11/17/22 941	Received in Laboratory by:	EEC	11/18/22 8:00

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Client Sample ID: TRIP BLANK_200
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176714-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 19:54*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 19:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 19:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 19:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176714-1

Client Sample ID: MW-178S_111622
Date Collected: 11/16/22 09:33
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176714-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 00:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/28/22 00:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 20:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 20:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 20:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 20:20*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 20:20*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 20:20*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/28/22 20:20*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:53:33 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176072-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Job ID: 240-176072-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176072-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176072-1	TRIP BLANK_89	Water	11/07/22 00:00	11/09/22 09:45
240-176072-2	MW-167S_110722	Water	11/07/22 13:59	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Client Sample ID: TRIP BLANK_89 — Lab Sample ID: 240-176072-1

No Detections.

Client Sample ID: MW-167S_110722 — Lab Sample ID: 240-176072-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Client Sample ID: TRIP BLANK_89
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176072-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/16/22 14:22*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/16/22 14:22*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/16/22 14:22*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 14:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Client Sample ID: MW-167S_110722
Date Collected: 11/07/22 13:59
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176072-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 16:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/15/22 16:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 18:21*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 18:21*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/22 18:21*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 18:21*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176069-C-2 MS	Matrix Spike	86	92	99	92
240-176069-F-2 MSD	Matrix Spike Duplicate	85	90	99	93
240-176072-1	TRIP BLANK_89	91	89	97	100
240-176072-2	MW-167S_110722	94	93	101	102
LCS 240-552229/5	Lab Control Sample	84	92	100	93
MB 240-552229/8	Method Blank	90	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176072-2	MW-167S_110722	119
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 13:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 13:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 13:35*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 13:35*	*1*

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	26.0		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-F-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176072-2	MW-167S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176072-1	TRIP BLANK_89	Total/NA	Water	8260D	
240-176072-2	MW-167S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176069-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Client Sample ID: TRIP BLANK_89

Lab Sample ID: 240-176072-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 14:22

Client Sample ID: MW-167S_110722

Lab Sample ID: 240-176072-2

Date Collected: 11/07/22 13:59

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 18:21
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 16:02

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176072-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lehcia Ferrera	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_89	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-167S_110722	11/07/22	13:54		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
															P	G								

240-176072 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12001 ~~Brecon~~ (LF) STARK

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehcia Ferrera	Arcadis	11/07/22 17:40	Pair cold Storage	Arcadis	11/07/22 17:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/8/22 0915	Jei Hae	EETA	11/8/22 0915
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jei Hae	EETA	11-8-22 943		EETNC	11-9-22 945

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176072
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.9.22 Opened on 11.9.22

Cooler unpacked by: Danny Rogers

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286771
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # None Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 176072

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/22/2022 7:53:33 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176072-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176072-1

		Sample Name:	TRIP BLANK_89				MW-167S_110722			
		Lab Sample ID:	2401760721				2401760722			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

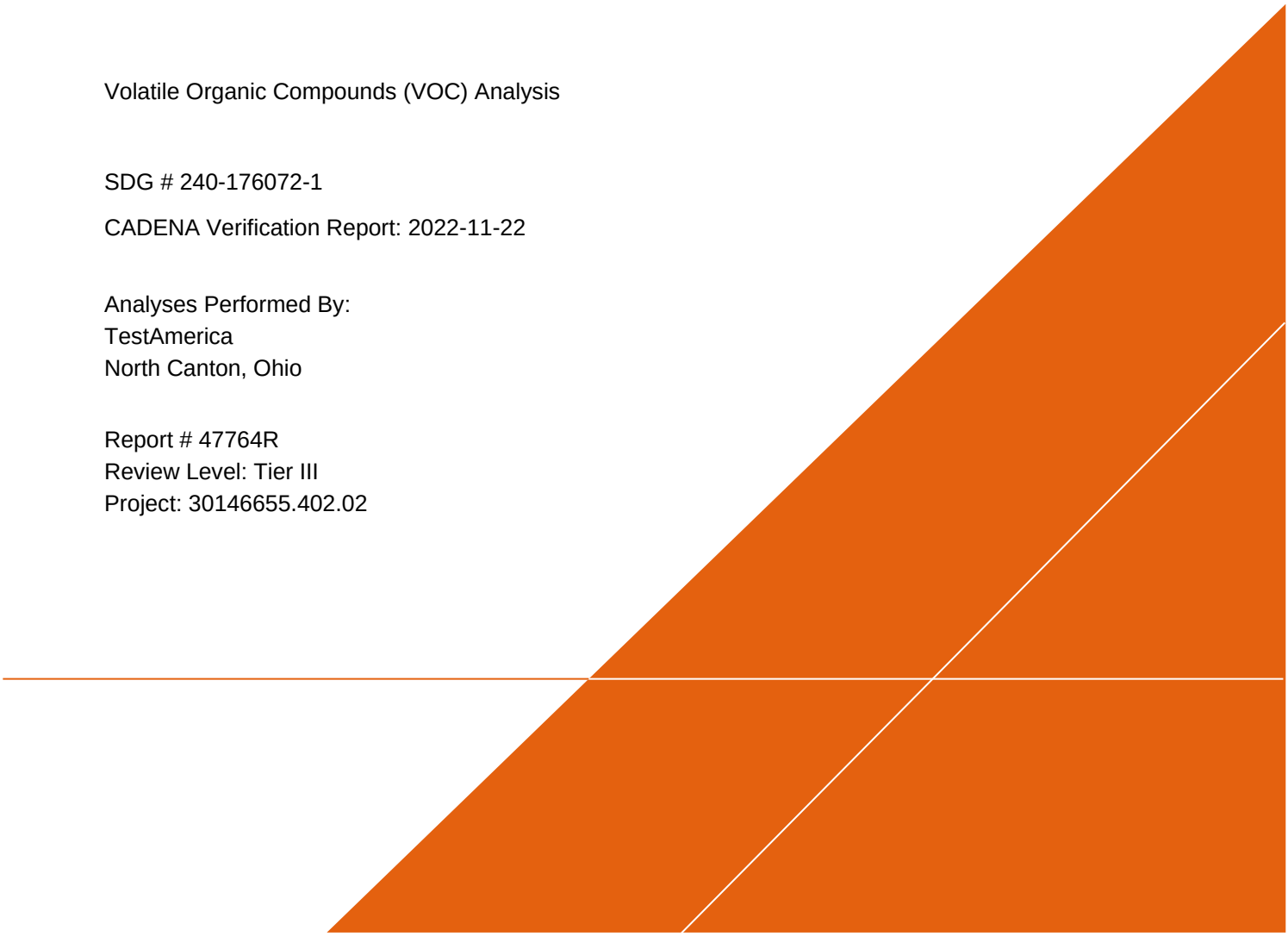
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176072-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47764R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176072-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_89	240-176072-1	Water	11/07/22		X	
MW-167S_110722	240-176072-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis				COC No:
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Project Name: Ford LTP Off-Site	Sampler Name: Lehicia Ferreira	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Number: 30146655.402.04	Method of Shipment/Carrier:			Lab sampling
PO # 30146655.402.04	Shipping/Tracking No:			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_89	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-167S_110722	11/07/22	13:54		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
															F									

240-176072 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12001 ~~Brittsh~~ (LF) STARK

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehicia Ferreira	Arcadis	11/07/22 17:40	Novi Cold Storage	Arcadis	11/07/22 17:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/8/22 0915		EETA	11/8/22 0915
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11-8-22 943		EETNC	11-9-22 945

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Client Sample ID: TRIP BLANK_89
Lab Sample ID: 240-176072-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/16/22 14:22*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/16/22 14:22*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/16/22 14:22*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 14:22*	*1*

Client Sample ID: MW-167S_110722
Lab Sample ID: 240-176072-2
Date Collected: 11/07/22 13:59
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 16:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/15/22 16:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 18:21*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 18:21*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/16/22 18:21*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 18:21*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:20:20 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176246-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

Generated
11/29/2022 8:20:20 AM

Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176246-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176246-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176246-1	TRIP BLANK_118	Water	11/08/22 00:00	11/11/22 08:00
240-176246-2	MW-162S_110822	Water	11/08/22 16:06	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Client Sample ID: TRIP BLANK_118 — Lab Sample ID: 240-176246-1

No Detections.

Client Sample ID: MW-162S_110822 — Lab Sample ID: 240-176246-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Client Sample ID: TRIP BLANK_118

Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176246-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/17/22 16:58*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 16:58*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/17/22 16:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/17/22 16:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Client Sample ID: MW-162S_110822
Date Collected: 11/08/22 16:06
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176246-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 03:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 03:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 17:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 17:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 17:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/17/22 17:23*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/17/22 17:23*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/17/22 17:23*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/17/22 17:23*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176246-1	TRIP BLANK_118	110	77	92	101
240-176246-2	MW-162S_110822	116	80	98	106
240-176249-A-3 MSD	Matrix Spike Duplicate	91	98	97	94
240-176249-D-3 MS	Matrix Spike	97	99	97	95
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176246-2	MW-162S_110822	80
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.0		ug/L		104	63 - 134
cis-1,2-Dichloroethene	25.0	26.0		ug/L		104	77 - 123
Tetrachloroethene	25.0	25.1		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	10.8		ug/L		87	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-D-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.84		ug/L		88	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

GC/MS VOA

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176246-1	TRIP BLANK_118	Total/NA	Water	8260D	
240-176246-2	MW-162S_110822	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176249-D-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176246-2	MW-162S_110822	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Client Sample ID: TRIP BLANK_118

Lab Sample ID: 240-176246-1

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 16:58

Client Sample ID: MW-162S_110822

Lab Sample ID: 240-176246-2

Date Collected: 11/08/22 16:06

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 17:23
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 03:56

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176246-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Olivia Ferreira	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_118	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1625_110822	11/8/22	16:06		6						6					N	G	X	X	X	X	X	✓	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176246 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 2017 Brewster - side yard

Submit all results through Cadena at jtomalia@caderlaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Olivia Ferreira	Arcadis	11/08/22 17:40	Refrigerated Storage	Arcadis	11/08/22 17:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		EEN	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETMC	11-11-22 80C

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176246
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-11-22 Opened on 11-11-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____°C Corrected Cooler Temp. ____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____°C Corrected Cooler Temp. ____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 eac Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC28679?
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WT-NC-099

Login # : 176246

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176246-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176246-1

		Sample Name:	TRIP BLANK_118				MW-162S_110822			
		Lab Sample ID:	2401762461				2401762462			
		Sample Date:	11/8/2022				11/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

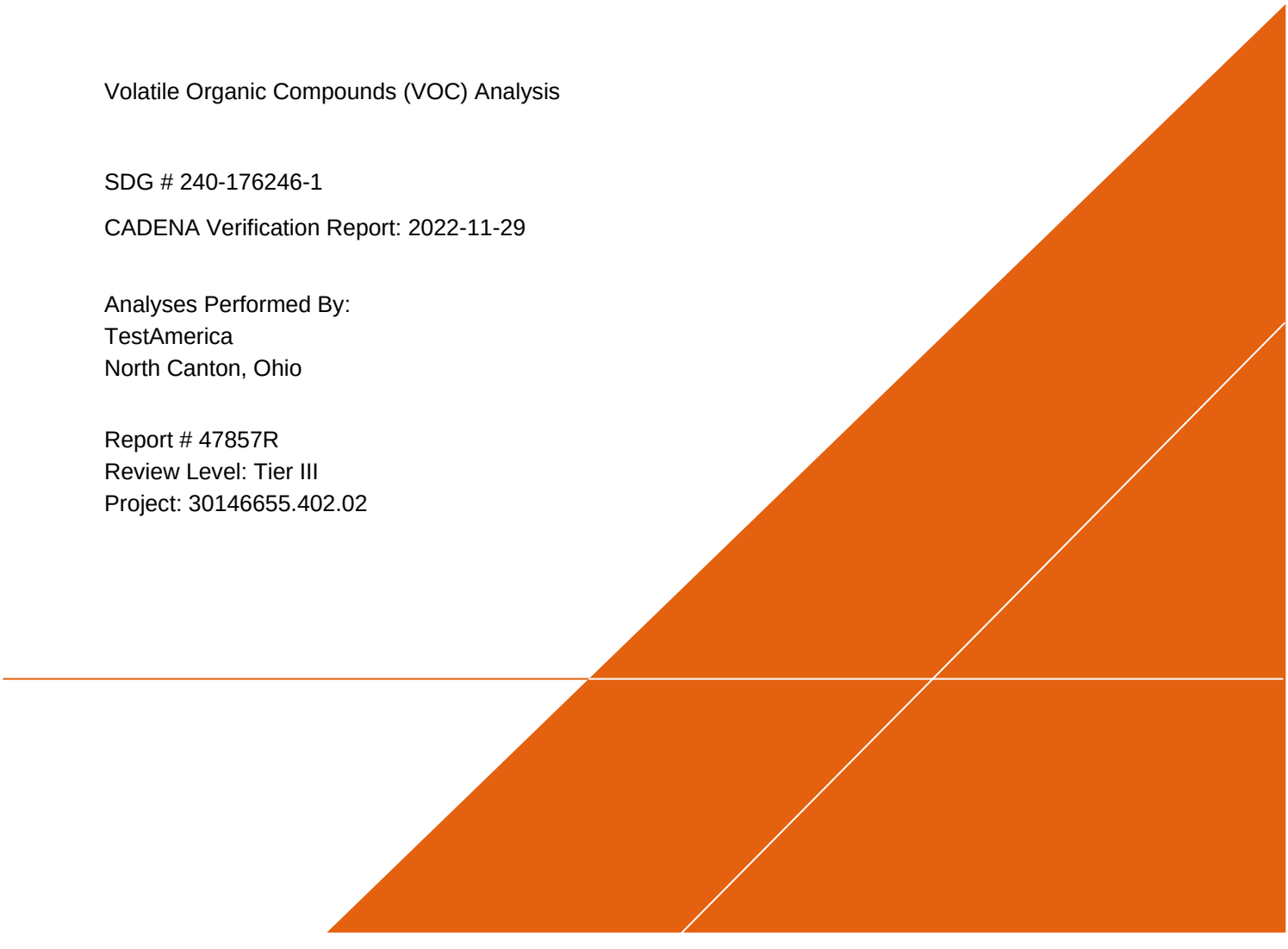
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176246-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47857R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176246-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_118	240-176246-1	Water	11/08/22		X	
MW-162S_110822	240-176246-2	Water	11/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lelicia Ferreira	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_118	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1625_110822	11/08/22	16:06		6						6					N	G	X	X	X	X	X	✓	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176246 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12017 Brewster - side yard

Submit all results through Cadena at jtomalia@caderlaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lelicia Ferreira	Arcadis	11/08/22 17:40	Bovi cold storage	Arcadis	11/08/22 17:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		EEN	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETMC	11-11-22 80C

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11/29/2022 8:20 AM

Client Sample ID: TRIP BLANK_118
Lab Sample ID: 240-176246-1
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*11/17/22 16:58*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 16:58*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/17/22 16:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/17/22 16:58*	*1*

Client Sample ID: MW-162S_110822
Lab Sample ID: 240-176246-2
Date Collected: 11/08/22 16:06
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 03:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 03:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 17:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 17:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 17:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/17/22 17:23*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/17/22 17:23*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/17/22 17:23*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/17/22 17:23*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:13:01 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175882-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Job ID: 240-175882-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175882-1

Comments
No additional comments.

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9º C, 1.2º C and 1.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175882-1	TRIP BLANK_32	Water	11/02/22 00:00	11/04/22 09:40
240-175882-2	MW-144S_110222	Water	11/02/22 13:07	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Client Sample ID: TRIP BLANK_32 — Lab Sample ID: 240-175882-1

No Detections.

Client Sample ID: MW-144S_110222 — Lab Sample ID: 240-175882-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Client Sample ID: TRIP BLANK_32

Date Collected: 11/02/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175882-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 15:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 15:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 15:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/14/22 15:59*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/14/22 15:59*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/14/22 15:59*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 15:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Client Sample ID: MW-144S_110222
Date Collected: 11/02/22 13:07
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175882-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/12/22 21:10*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 16:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 16:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 16:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/14/22 16:23*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/14/22 16:23*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/14/22 16:23*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/14/22 16:23*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175783-E-3 MS	Matrix Spike	99	102	107	96
240-175783-I-3 MSD	Matrix Spike Duplicate	102	102	110	99
240-175882-1	TRIP BLANK_32	105	93	106	98
240-175882-2	MW-144S_110222	107	93	105	101
LCS 240-551772/5	Lab Control Sample	98	101	106	96
MB 240-551772/8	Method Blank	104	92	105	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175790-G-5 MS	Matrix Spike	114
240-175790-M-5 MSD	Matrix Spike Duplicate	119
240-175882-2	MW-144S_110222	116
LCS 240-551688/3	Lab Control Sample	117
MB 240-551688/4	Method Blank	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551772/8
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 10:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 10:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 10:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 10:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 10:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 10:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/14/22 10:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/14/22 10:58*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/14/22 10:58*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 10:58*	*1*

Lab Sample ID: LCS 240-551772/5
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.1		ug/L		86	63 - 134
cis-1,2-Dichloroethene	20.0	17.1		ug/L		85	77 - 123
Tetrachloroethene	20.0	18.8		ug/L		94	76 - 123
trans-1,2-Dichloroethene	20.0	17.1		ug/L		86	75 - 124
Trichloroethene	20.0	17.1		ug/L		86	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175783-E-3 MS
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	20.0	19.5		ug/L		97	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.7		ug/L		89	56 - 136
Trichloroethene	1.0	U	20.0	17.5		ug/L		88	61 - 124
Vinyl chloride	1.0	U	20.0	17.4		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175783-E-3 MS
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175783-I-3 MSD
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	1	14
Tetrachloroethene	1.0	U	20.0	19.8		ug/L		99	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		90	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	17.8		ug/L		89	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551688/4
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 17:07*	*1*

Lab Sample ID: LCS 240-551688/3
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.52		ug/L		95	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*

Lab Sample ID: 240-175790-G-5 MS
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.82		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*

Lab Sample ID: 240-175790-M-5 MSD
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	10	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

GC/MS VOA

Analysis Batch: 551688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175882-2	MW-144S_110222	Total/NA	Water	8260D SIM	
MB 240-551688/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551688/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175790-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175790-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175882-1	TRIP BLANK_32	Total/NA	Water	8260D	
240-175882-2	MW-144S_110222	Total/NA	Water	8260D	
MB 240-551772/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551772/5	Lab Control Sample	Total/NA	Water	8260D	
240-175783-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-175783-I-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Client Sample ID: TRIP BLANK_32

Lab Sample ID: 240-175882-1

Date Collected: 11/02/22 00:00

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551772	TJL1	EET CAN	11/14/22 15:59

Client Sample ID: MW-144S_110222

Lab Sample ID: 240-175882-2

Date Collected: 11/02/22 13:07

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551772	TJL1	EET CAN	11/14/22 16:23
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 21:10

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175882-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Olivia Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_32		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-194S_110222	11/02/22	1307		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-175882 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~Stark Rd~~ ROW 12175 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Olivia Ferreira	Arcadis	11/02/22 16:40	Novi Cold Storage	Arcadis	11/02/22 16:40
Sommer Day	Arcadis	11/3/22 1500			11/3/22 1500
		11/3/22 1530	Received in Laboratory by:	EETNC	11-4-22 0940

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176882
Barberton Facility

Client Arcadis Site Name LTP

Cooler unpacked by: Anne

Cooler Received on _____ Opened on _____

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286777
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 175882

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.5	1.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 16, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175882-1
Sample date: 2022-11-02
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175882-1

		Sample Name:	TRIP BLANK_32				MW-144S_110222			
		Lab Sample ID:	2401758821				2401758822			
		Sample Date:	11/2/2022				11/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

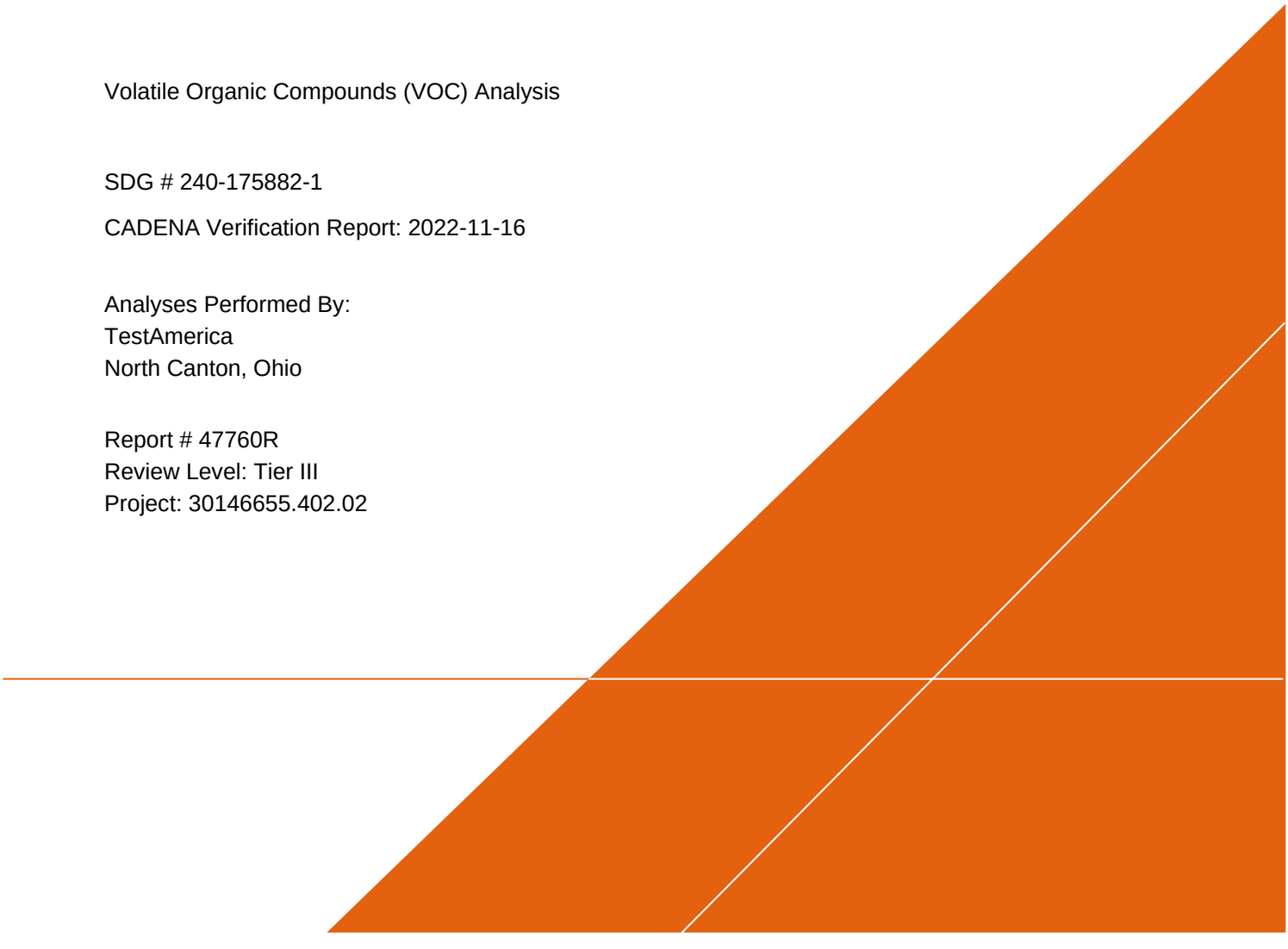
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175882-1

CADENA Verification Report: 2022-11-16

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47760R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175882-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_32	240-175882-1	Water	11/02/22		X	
MW-144S_110222	240-175882-2	Water	11/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Olivia Ferreira	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_32		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-194S_110222	11/02/22	1307		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-175882 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~Stark Rd~~ ROW 12125 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Olivia Ferreira	Arcadis	11/02/22 16:40	Novi Cold Storage	Arcadis	11/02/22 16:40
Sommer Loy	Arcadis	11/3/22 1500			11/3/22 1500
		11/3/22 1530	Received in Laboratory by:	EETNC	11-4-22 0940

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Client Sample ID: TRIP BLANK_32
Lab Sample ID: 240-175882-1
Date Collected: 11/02/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 15:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 15:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 15:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/14/22 15:59*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/14/22 15:59*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/14/22 15:59*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 15:59*	*1*

Client Sample ID: MW-144S_110222
Lab Sample ID: 240-175882-2
Date Collected: 11/02/22 13:07
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/12/22 21:10*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 16:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 16:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 16:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/14/22 16:23*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/14/22 16:23*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/14/22 16:23*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/14/22 16:23*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:12:28 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176239-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176239-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176239-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
Method 8260D: An MS/MSD was done in 240-552226 however it was not acquired by the data system due to an instrument error. The effected sample is TRIP BLANK_106 (240-176239-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176239-1	TRIP BLANK_106	Water	11/08/22 00:00	11/11/22 08:00
240-176239-2	MW-119S_110822	Water	11/08/22 11:08	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Client Sample ID: TRIP BLANK_106 — Lab Sample ID: 240-176239-1

No Detections.

Client Sample ID: MW-119S_110822 — Lab Sample ID: 240-176239-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Client Sample ID: TRIP BLANK_106

Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176239-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/16/22 14:56*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/16/22 14:56*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/16/22 14:56*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/16/22 14:56*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Client Sample ID: MW-119S_110822
Date Collected: 11/08/22 11:08
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176239-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 01:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 01:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 14:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 14:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 14:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 14:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/17/22 14:52*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 14:52*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/17/22 14:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/17/22 14:52*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176239-1	TRIP BLANK_106	99	76	92	98
240-176239-2	MW-119S_110822	106	77	94	100
240-176249-A-3 MSD	Matrix Spike Duplicate	91	98	97	94
240-176249-D-3 MS	Matrix Spike	97	99	97	95
LCS 240-552226/5	Lab Control Sample	93	96	99	95
LCS 240-552226/6	Lab Control Sample	90	91	94	89
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552226/8	Method Blank	100	82	94	96
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176239-2	MW-119S_110822	79
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552226/8
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/16/22 14:05*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/16/22 14:05*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 14:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/22 14:05*	*1*

Lab Sample ID: LCS 240-552226/5
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.7		ug/L		107	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	12.5	10.2		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: LCS 240-552226/6
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.0		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			25.0	26.0		ug/L		104	77 - 123		
Tetrachloroethene			25.0	25.1		ug/L		101	76 - 123		
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	75 - 124		
Trichloroethene			25.0	24.3		ug/L		97	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-D-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane			10.0	8.84		ug/L		88	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

GC/MS VOA

Analysis Batch: 552226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176239-1	TRIP BLANK_106	Total/NA	Water	8260D	
MB 240-552226/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552226/5	Lab Control Sample	Total/NA	Water	8260D	
LCS 240-552226/6	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176239-2	MW-119S_110822	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176249-D-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176239-2	MW-119S_110822	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Client Sample ID: TRIP BLANK_106

Lab Sample ID: 240-176239-1

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552226	SAM	EET CAN	11/16/22 14:56

Client Sample ID: MW-119S_110822

Lab Sample ID: 240-176239-2

Date Collected: 11/08/22 11:08

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 14:52
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 01:49

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176239-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Samantha Sepaichler	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240		Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_106	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1195_110822	11/8/22	11:08		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176239 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12034 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/8/22 15:45	NOVI cold STORAGE	Arcadis	11/8/22 15:45
	ARCADIS	11/10/22 1515		EEPA	11/10/22 1515
			Received in Laboratory by:	EETX	11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176239
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by:

Cooler Received on 11-11-22 Opened on 11-11-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176239

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176239-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176239-1

		Sample Name:	TRIP BLANK_106				MW-119S_110822			
		Lab Sample ID:	2401762391				2401762392			
		Sample Date:	11/8/2022				11/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

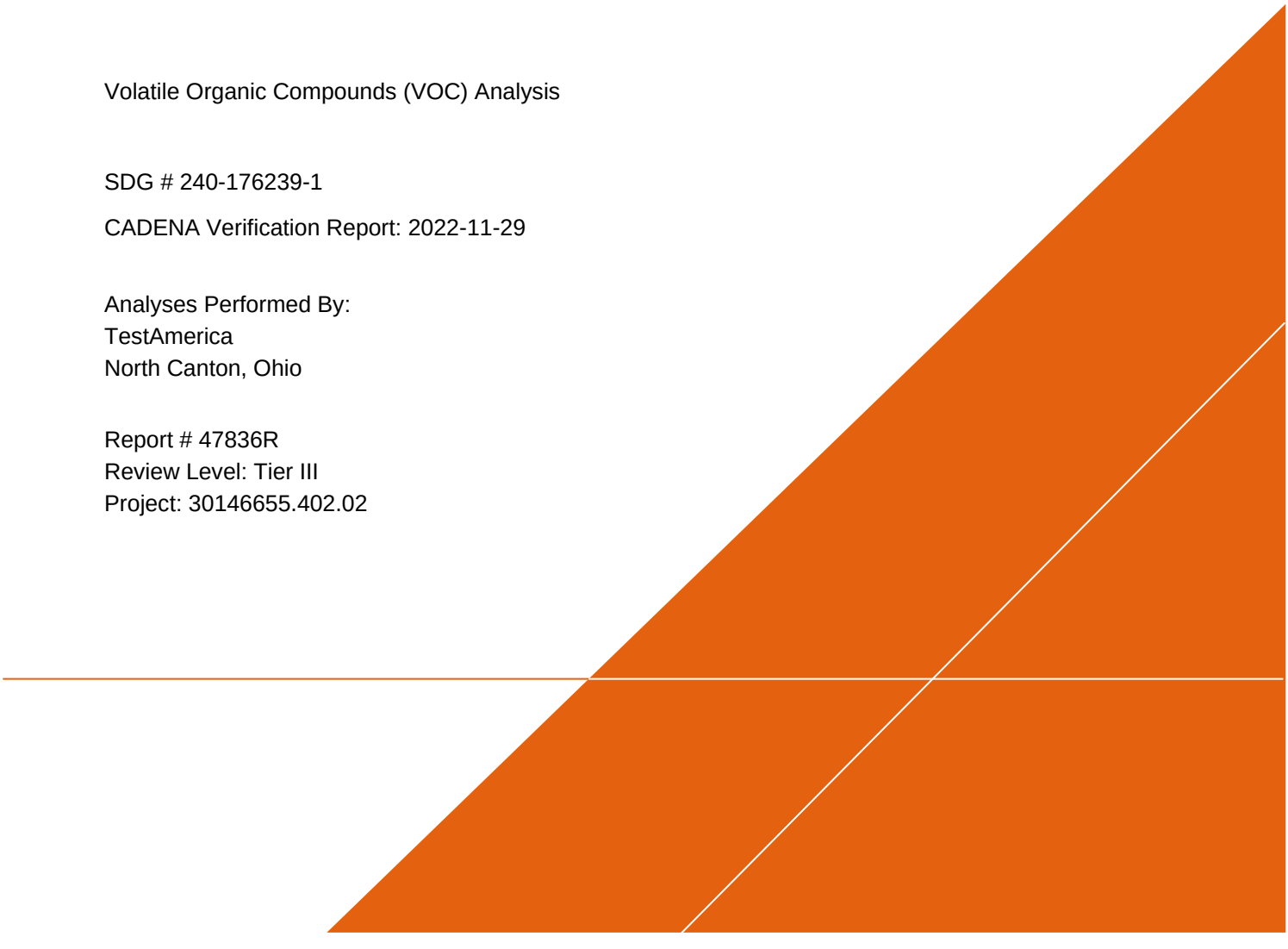
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176239-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47836R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176239-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_106	240-176239-1	Water	11/08/22		X	
MW-119S_110822	240-176239-2	Water	11/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 06, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Sepaichler	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_106	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1195_110822	11/8/22	11:08		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176239 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12034 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/8/22 15:45	NOVI cold storage	Arcadis	11/8/22 15:45
	ARCADIS	11/8/22 1515		EETA	11/10/22 1515
			Received in Laboratory by:	EETMC	11-11-22 800

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Client Sample ID: TRIP BLANK_106
Lab Sample ID: 240-176239-1
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/16/22 14:56*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/16/22 14:56*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/16/22 14:56*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/16/22 14:56*	*1*

Client Sample ID: MW-119S_110822
Lab Sample ID: 240-176239-2
Date Collected: 11/08/22 11:08
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 01:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 01:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 14:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 14:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 14:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 14:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/17/22 14:52*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 14:52*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/17/22 14:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/17/22 14:52*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:11:53 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176237-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176237-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176237-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
Method 8260D: An MS/MSD was done in 240-552226 however it was not acquired by the data system due to an instrument error. The effected sample is TRIP BLANK_11 (240-176237-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176237-1	TRIP BLANK_11	Water	11/08/22 00:00	11/11/22 08:00
240-176237-2	MW-91S_110822	Water	11/08/22 14:51	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Client Sample ID: TRIP BLANK_11 — Lab Sample ID: 240-176237-1

No Detections.

Client Sample ID: MW-91S_110822 — Lab Sample ID: 240-176237-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Client Sample ID: TRIP BLANK_11

Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176237-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/16/22 14:30*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/16/22 14:30*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 14:30*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/22 14:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Client Sample ID: MW-91S_110822
Date Collected: 11/08/22 14:51
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176237-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/21/22 01:24*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 14:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 14:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 14:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 14:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/17/22 14:27*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/17/22 14:27*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/17/22 14:27*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/17/22 14:27*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176237-1	TRIP BLANK_11	100	82	94	97
240-176237-2	MW-91S_110822	103	79	93	98
240-176249-A-3 MSD	Matrix Spike Duplicate	91	98	97	94
240-176249-D-3 MS	Matrix Spike	97	99	97	95
LCS 240-552226/5	Lab Control Sample	93	96	99	95
LCS 240-552226/6	Lab Control Sample	90	91	94	89
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552226/8	Method Blank	100	82	94	96
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176237-2	MW-91S_110822	77
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552226/8
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/16/22 14:05*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/16/22 14:05*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 14:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/22 14:05*	*1*

Lab Sample ID: LCS 240-552226/5
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.7		ug/L		107	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	12.5	10.2		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: LCS 240-552226/6
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.0		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			25.0	26.0		ug/L		104	77 - 123		
Tetrachloroethene			25.0	25.1		ug/L		101	76 - 123		
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	75 - 124		
Trichloroethene			25.0	24.3		ug/L		97	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-D-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane			10.0	8.84		ug/L		88	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

GC/MS VOA

Analysis Batch: 552226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176237-1	TRIP BLANK_11	Total/NA	Water	8260D	
MB 240-552226/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552226/5	Lab Control Sample	Total/NA	Water	8260D	
LCS 240-552226/6	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176237-2	MW-91S_110822	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176249-D-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176237-2	MW-91S_110822	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Client Sample ID: TRIP BLANK_11

Lab Sample ID: 240-176237-1

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552226	SAM	EET CAN	11/16/22 14:30

Client Sample ID: MW-91S_110822

Lab Sample ID: 240-176237-2

Date Collected: 11/08/22 14:51

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 14:27
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 01:24

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176237-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Olivia Ferreira	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_11	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-91S_110822	11/08/22	14:51		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176237 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12034 Brewster i frontyard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Olivia Ferreira	Arcadis	11/08/22 17:40	Novi Cold Storage	Arcadis	11/08/22 17:40
	Company: ARCADIS	Date/Time: 11/10/22 1515	Received by:	Company: EEONA	Date/Time: 11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: EETNC	Date/Time: 11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 146237
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-11-22 Opened on 11-11-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? — Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? — Yes No
11. Sufficient quantity received to perform indicated analyses? — Yes No
12. Are these work share samples and all listed on the COC? — Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? — Yes No
15. Were air bubbles >6 mm in any VOA vials? ● Larger than this. — Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none — Yes No
17. Was a LL Hg or Me Hg trip blank present? ____ — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176237-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176237-1

		Sample Name:	TRIP BLANK_11				MW-91S_110822			
		Lab Sample ID:	2401762371				2401762372			
		Sample Date:	11/8/2022				11/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:19:48 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176244-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Job ID: 240-176244-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176244-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176244-1	TRIP BLANK_90	Water	11/08/22 00:00	11/11/22 08:00
240-176244-2	MW-92S_110822	Water	11/08/22 13:52	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Client Sample ID: TRIP BLANK_90 — Lab Sample ID: 240-176244-1

No Detections.

Client Sample ID: MW-92S_110822 — Lab Sample ID: 240-176244-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Client Sample ID: TRIP BLANK_90
Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176244-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 14:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 14:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 14:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/17/22 14:02*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 14:02*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 14:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/17/22 14:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Client Sample ID: MW-92S_110822
Date Collected: 11/08/22 13:52
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176244-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 03:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/17/22 16:33*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 16:33*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/17/22 16:33*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/17/22 16:33*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176244-1	TRIP BLANK_90	107	77	95	98
240-176244-2	MW-92S_110822	108	77	94	102
240-176249-A-3 MSD	Matrix Spike Duplicate	91	98	97	94
240-176249-D-3 MS	Matrix Spike	97	99	97	95
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176244-2	MW-92S_110822	80
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.0		ug/L		104	63 - 134
cis-1,2-Dichloroethene	25.0	26.0		ug/L		104	77 - 123
Tetrachloroethene	25.0	25.1		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	10.8		ug/L		87	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-D-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.84		ug/L		88	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

GC/MS VOA

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176244-1	TRIP BLANK_90	Total/NA	Water	8260D	
240-176244-2	MW-92S_110822	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176249-D-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176244-2	MW-92S_110822	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Client Sample ID: TRIP BLANK_90

Lab Sample ID: 240-176244-1

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 14:02

Client Sample ID: MW-92S_110822

Lab Sample ID: 240-176244-2

Date Collected: 11/08/22 13:52

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 16:33
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 03:30

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176244-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: LETICIA FERRERIA	TAT if different from below: 10 day; ☑ 2 weeks; ☐ 3 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_90	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-925_110822	11/8/22	1352		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176244 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12036 BREWSTER

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: LETICIA FERRERIA	ARCADIS	11/8/22 1740	Received by: NOVI COLD STORAGE	ARCADIS	11/8/22 1740
Relinquished by:	ARCADIS	11/10/22 1515	Received by:	FEDEX	11/10/22 1515
Relinquished by:			Received in Laboratory by:	TETNC	11-11-22 800

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11/29/2022

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176244
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-11-22 Opened on 11-11-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176244

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176244-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176244-1

		Sample Name:	TRIP BLANK_90				MW-92S_110822			
		Lab Sample ID:	2401762441				2401762442			
		Sample Date:	11/8/2022				11/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

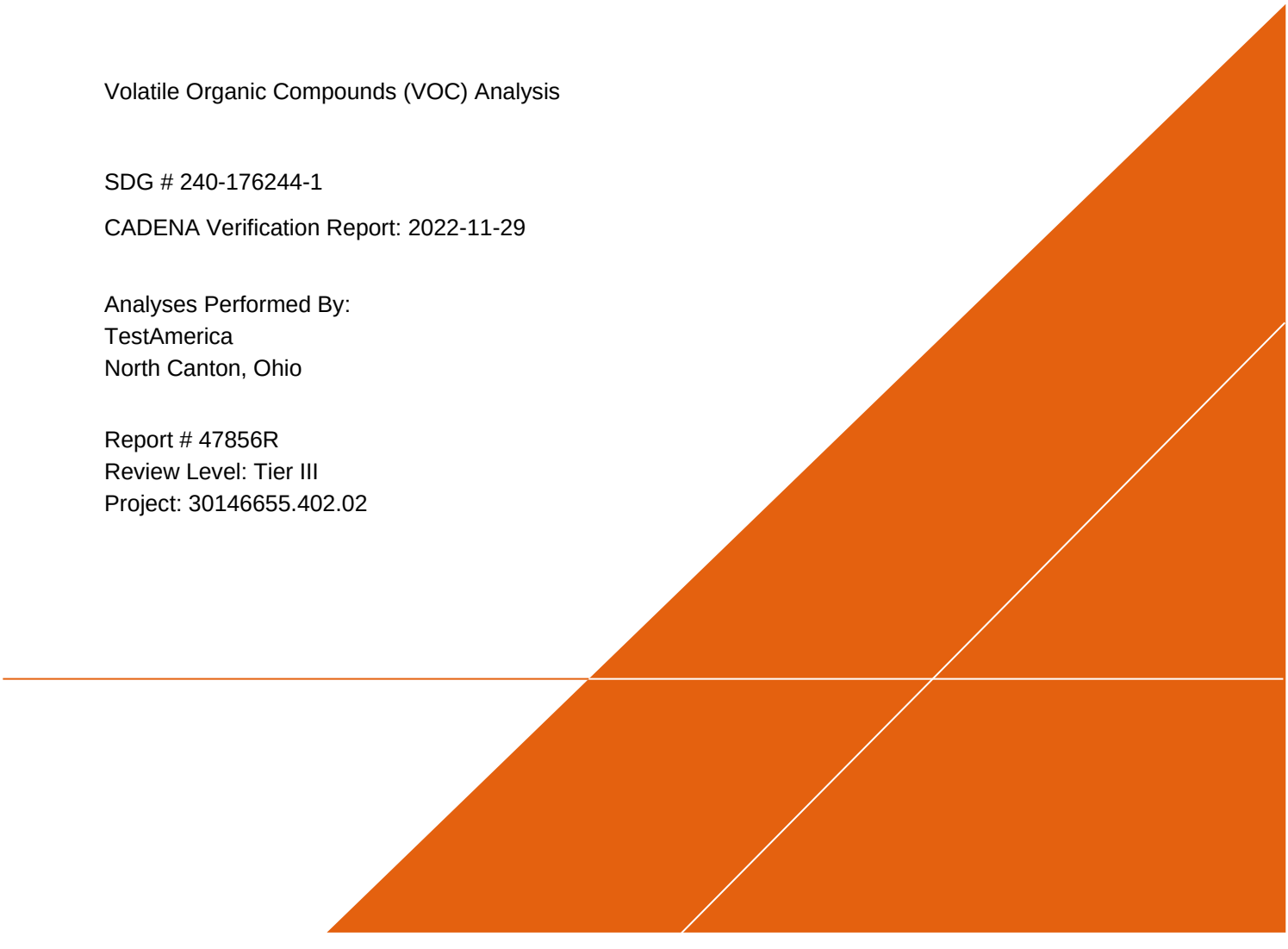
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176244-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47856R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176244-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_90	240-176244-1	Water	11/08/22		X	
MW-92S_110822	240-176244-2	Water	11/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: LETICIA FERRERIA	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day ✓ 2 weeks		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_90	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-925_110822	11/8/22	1352		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176244 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ✓ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12036 BREWSTER
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
LETICIA FERRERIA	ARCADIS	11/8/22 1740	NOVI COLD STORAGE	ARCADIS	11/8/22 1740
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		FEDEX	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				TETNC	11-11-22 800

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Client Sample ID: TRIP BLANK_90
Lab Sample ID: 240-176244-1
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 14:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 14:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 14:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/17/22 14:02*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 14:02*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 14:02*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/17/22 14:02*	*1*

Client Sample ID: MW-92S_110822
Lab Sample ID: 240-176244-2
Date Collected: 11/08/22 13:52
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 03:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/17/22 16:33*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/17/22 16:33*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/17/22 16:33*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/17/22 16:33*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:59:12 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176080-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176080-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176080-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176080-1	TRIP BLANK_84	Water	11/07/22 00:00	11/09/22 09:45
240-176080-2	MW-111S_110722	Water	11/07/22 12:29	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Client Sample ID: TRIP BLANK_84 — Lab Sample ID: 240-176080-1

No Detections.

Client Sample ID: MW-111S_110722 — Lab Sample ID: 240-176080-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Client Sample ID: TRIP BLANK_84
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176080-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/16/22 15:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/16/22 15:58*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 15:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 15:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Client Sample ID: MW-111S_110722
Date Collected: 11/07/22 12:29
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176080-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/15/22 17:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/16/22 19:57*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 19:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 19:57*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 19:57*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176069-C-2 MS	Matrix Spike	86	92	99	92
240-176069-F-2 MSD	Matrix Spike Duplicate	85	90	99	93
240-176080-1	TRIP BLANK_84	91	92	98	101
240-176080-2	MW-111S_110722	97	93	99	101
LCS 240-552229/5	Lab Control Sample	84	92	100	93
MB 240-552229/8	Method Blank	90	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176080-2	MW-111S_110722	117
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 13:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 13:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 13:35*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 13:35*	*1*

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	26.0		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-F-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176080-2	MW-111S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176080-1	TRIP BLANK_84	Total/NA	Water	8260D	
240-176080-2	MW-111S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176069-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Client Sample ID: TRIP BLANK_84

Lab Sample ID: 240-176080-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 15:58

Client Sample ID: MW-111S_110722

Lab Sample ID: 240-176080-2

Date Collected: 11/07/22 12:29

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 19:57
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 17:39

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176080-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehua Ferreira	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_84	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-11S_110722	11/07/22	12:29		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176080 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12051 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehua Ferreira	Arcadis	11/07/22 17:40	Novi Cold Storage	Arcadis	11/07/22 17:40
	ARCADIS	11/8/22 / 0915		EETA	11/8/22 0915
	EETA	11-8-22 943	Received in Laboratory by:	EETDC	11-9-22 945

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176080
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.9.22 Opened on 11.9.22

Cooler unpacked by: Danny Royer

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286777
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # None Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION
Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 176080

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/22/2022 7:59:12 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176080-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176080-1

		Sample Name:	TRIP BLANK_84				MW-111S_110722			
		Lab Sample ID:	2401760801				2401760802			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

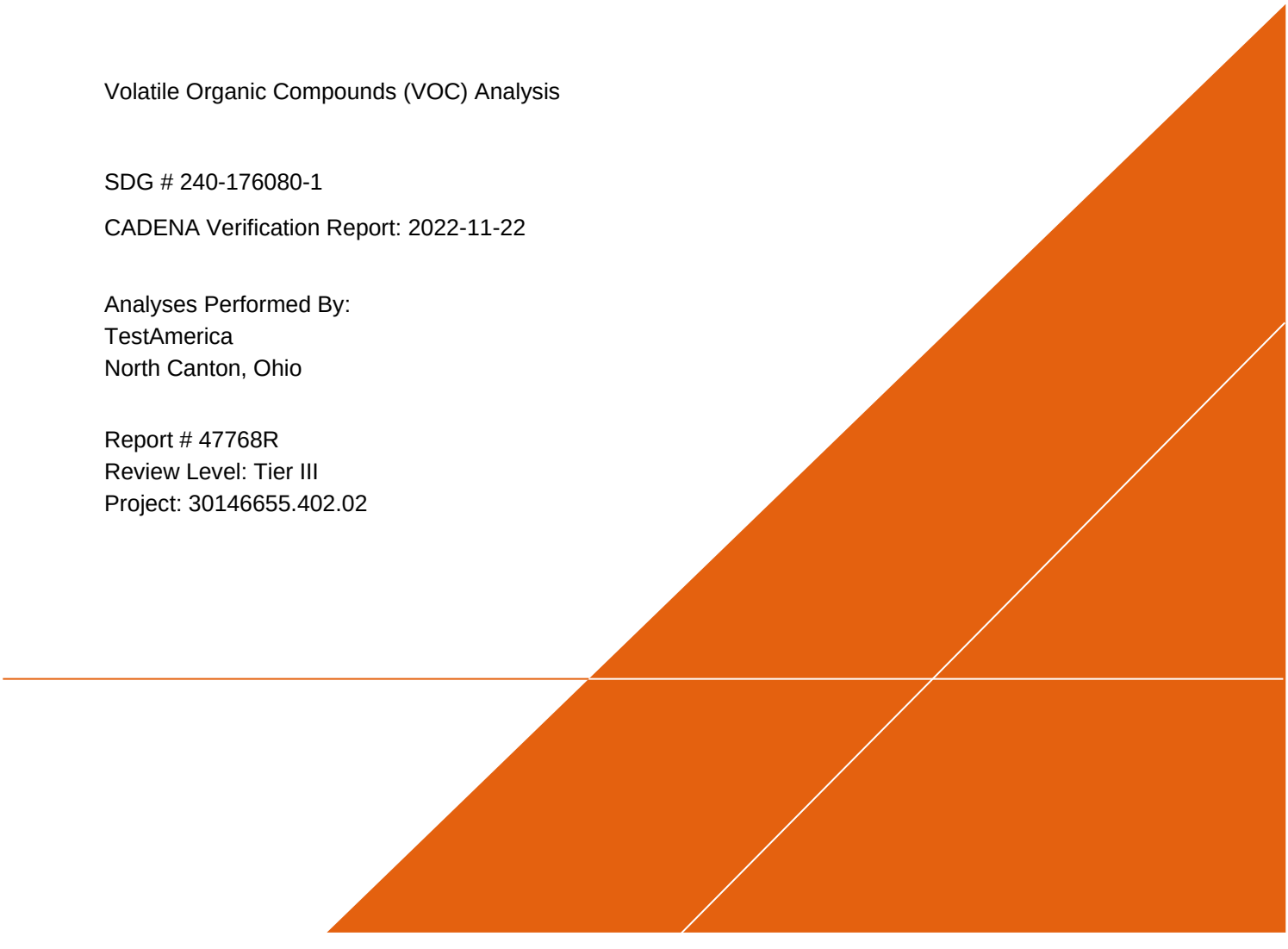
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176080-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47768R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176080-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_84	240-176080-1	Water	11/07/22		X	
MW-111S_110722	240-176080-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 05, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 06, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Lehun Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_84	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-11S_110722	11/07/22	12:29		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176080 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12051 Stark

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehun Ferreira	Arcadis	11/07/22 17:40	Novi Cold Storage	Arcadis	11/07/22 17:40
	Company: ARCADIS	Date/Time: 11/8/22 / 0915	Received by:	Company: EETA	Date/Time: 11/8/22 0915
Relinquished by:	Company: EETA	Date/Time: 11-8-22 943	Received in Laboratory by:	Company: EETDC	Date/Time: 11-9-22 945

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Client Sample ID: TRIP BLANK_84
Lab Sample ID: 240-176080-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/16/22 15:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/16/22 15:58*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 15:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 15:58*	*1*

Client Sample ID: MW-111S_110722
Lab Sample ID: 240-176080-2
Date Collected: 11/07/22 12:29
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/15/22 17:39*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/16/22 19:57*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 19:57*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 19:57*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 19:57*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/23/2022 9:01:18 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176467-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Job ID: 240-176467-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176467-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176467-1	TRIP BLANK_17	Water	11/09/22 00:00	11/15/22 10:00
240-176467-2	MW-155S_110922	Water	11/09/22 14:11	11/15/22 10:00
240-176467-3	DUP-08	Water	11/09/22 00:00	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: TRIP BLANK_17 — Lab Sample ID: 240-176467-1

No Detections.

Client Sample ID: MW-155S_110922 — Lab Sample ID: 240-176467-2

No Detections.

Client Sample ID: DUP-08 — Lab Sample ID: 240-176467-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: TRIP BLANK_17
Date Collected: 11/09/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176467-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 13:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 13:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 13:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 13:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/18/22 13:47*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 13:47*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 13:47*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/18/22 13:47*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: MW-155S_110922
Date Collected: 11/09/22 14:11
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176467-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 20:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/17/22 20:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 15:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 15:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 15:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/18/22 15:52*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 15:52*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 15:52*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 15:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: DUP-08
Date Collected: 11/09/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176467-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/17/22 20:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 16:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 16:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 16:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/18/22 16:17*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 16:17*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 16:17*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 16:17*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176467-1	TRIP BLANK_17	97	75	93	89
240-176467-2	MW-155S_110922	103	73	92	94
240-176467-3	DUP-08	103	74	92	94
240-176475-D-4 MSD	Matrix Spike Duplicate	86	96	97	84
240-176475-E-4 MS	Matrix Spike	86	95	98	87
LCS 240-552675/5	Lab Control Sample	86	93	97	86
MB 240-552675/8	Method Blank	96	74	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176467-2	MW-155S_110922	78
240-176467-3	DUP-08	78
500-225128-C-10 MS	Matrix Spike	81
500-225128-C-10 MSD	Matrix Spike Duplicate	79
LCS 240-552321/3	Lab Control Sample	80
MB 240-552321/4	Method Blank	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552675/8
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 12:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 12:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 12:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/18/22 12:32*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 12:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 12:32*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/18/22 12:32*	*1*

Lab Sample ID: LCS 240-552675/5
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.9		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	24.3		ug/L		97	77 - 123
Tetrachloroethene	25.0	24.0		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	24.1		ug/L		97	75 - 124
Trichloroethene	25.0	21.9		ug/L		88	70 - 122
Vinyl chloride	12.5	12.9		ug/L		103	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	20.0		ug/L		80	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	3	15
Trichloroethene	1.0	U	25.0	18.0		ug/L		72	61 - 124	5	15
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176475-E-4 MS
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	18.9		ug/L		76	61 - 124
Vinyl chloride	1.0	U	25.0	23.3		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552321/4
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/17/22 11:09*	*1*

Lab Sample ID: LCS 240-552321/3
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.63		ug/L		96	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MS
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	83		20.0	105	4	ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MSD
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	83		20.0	104	4	ug/L		108	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

GC/MS VOA

Analysis Batch: 552321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176467-2	MW-155S_110922	Total/NA	Water	8260D SIM	
240-176467-3	DUP-08	Total/NA	Water	8260D SIM	
MB 240-552321/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552321/3	Lab Control Sample	Total/NA	Water	8260D SIM	
500-225128-C-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-225128-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176467-1	TRIP BLANK_17	Total/NA	Water	8260D	
240-176467-2	MW-155S_110922	Total/NA	Water	8260D	
240-176467-3	DUP-08	Total/NA	Water	8260D	
MB 240-552675/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552675/5	Lab Control Sample	Total/NA	Water	8260D	
240-176475-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176475-E-4 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: TRIP BLANK_17

Lab Sample ID: 240-176467-1

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 13:47

Client Sample ID: MW-155S_110922

Lab Sample ID: 240-176467-2

Date Collected: 11/09/22 14:11

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 15:52
Total/NA	Analysis	8260D SIM		1	552321	CS	EET CAN	11/17/22 20:33

Client Sample ID: DUP-08

Lab Sample ID: 240-176467-3

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 16:17
Total/NA	Analysis	8260D SIM		1	552321	CS	EET CAN	11/17/22 20:59

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks; 2 weeks ✓; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_17	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1555_110922	11/09/22	1411		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-08	11/09/22	—		X						6					N	G	X	X	X	X	X	X	X	

240-176467 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal: Return to Client ✓ Disposal By ... nths

Special Instructions/QC Requirements & Comments:

Sample Address: 12066 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/10/22 1700	Novi, cold storage	Arcadis	11/10/22 1700
	ARCADIS	11/11/22 0950			11/11/22 0950
		11/11/22 0950	Received in Laboratory by:		11-5-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176467
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Y)	(N)
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Con Med	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176467

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/23/2022 9:01:18 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 23, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176467-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-23
Initial Data Verification completed by CADENA: 2022-11-23
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176467-1

		Sample Name:	TRIP BLANK_17				MW-155S_110922				DUP-08			
		Lab Sample ID:	2401764671				2401764672				2401764673			
		Sample Date:	11/9/2022				11/9/2022				11/9/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

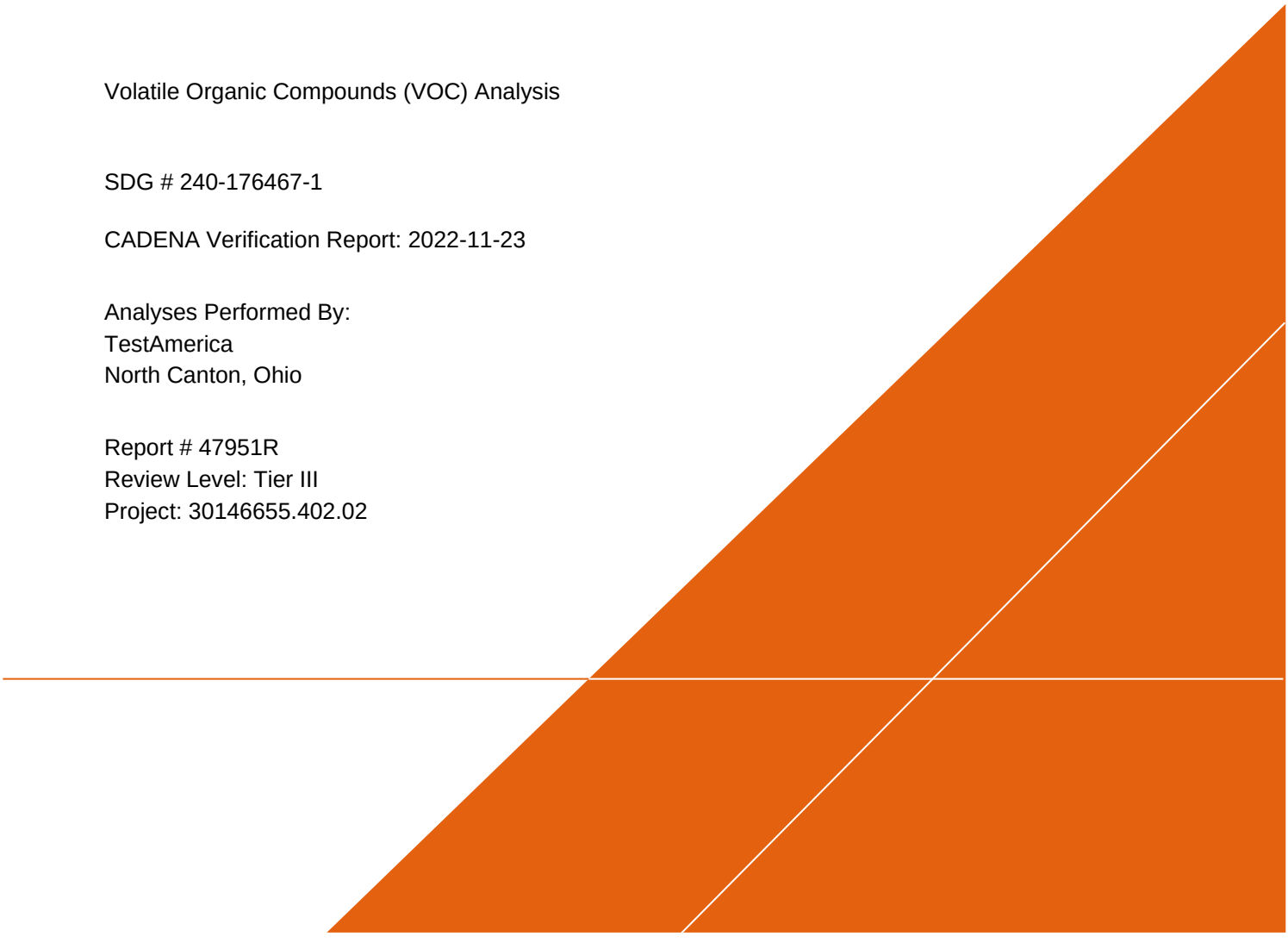
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176467-1

CADENA Verification Report: 2022-11-23

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47951R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176467-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_17	240-176467-1	Water	11/09/22		X	
MW-155S_110922	240-176467-2	Water	11/09/22		X	X
DUP-08	240-176467-3	Water	11/09/22	MW-155S_110922	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-155S_110922 / DUP-08	All target compounds	U	U	AC

Notes:

AC – Acceptable

The results between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Initial / Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 15, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_17	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1555_110922	11/09/22	1411		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-08	11/09/22	—		X						6					N	G	X	X	X	X	X	X	X	

240-176467 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal: Return to Client; Disposal By ...; ...nths

Special Instructions/QC Requirements & Comments:

Sample Address: 12066 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Gary Schafer	Arcadis	11/10/22	1700	Received by: Novi, cold storage	Arcadis	11/10/22	1700
Relinquished by:	Arcadis	11/11/22	0950	Received by:		11/11/22	0950
Relinquished by:		11/11/22	0950	Received by/Laboratory by:		11-5-22	10:00

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: TRIP BLANK_17
Date Collected: 11/09/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176467-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 13:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 13:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 13:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 13:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/18/22 13:47*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 13:47*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 13:47*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/18/22 13:47*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: MW-155S_110922
Date Collected: 11/09/22 14:11
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176467-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 20:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/17/22 20:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 15:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 15:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 15:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/18/22 15:52*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 15:52*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 15:52*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 15:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176467-1

Client Sample ID: DUP-08
Date Collected: 11/09/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176467-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/17/22 20:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 16:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 16:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 16:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/18/22 16:17*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 16:17*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 16:17*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 16:17*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:12:24 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175881-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Job ID: 240-175881-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175881-1

Comments
No additional comments.

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9º C, 1.2º C and 1.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175881-1	TRIP BLANK_30	Water	11/02/22 00:00	11/04/22 09:40
240-175881-2	MW-143S_110222	Water	11/02/22 14:54	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Client Sample ID: TRIP BLANK_30 — Lab Sample ID: 240-175881-1

No Detections.

Client Sample ID: MW-143S_110222 — Lab Sample ID: 240-175881-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Client Sample ID: TRIP BLANK_30

Date Collected: 11/02/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175881-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/12/22 18:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/12/22 18:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 18:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/12/22 18:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 18:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/12/22 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/12/22 18:37*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/12/22 18:37*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/12/22 18:37*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/12/22 18:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Client Sample ID: MW-143S_110222
Date Collected: 11/02/22 14:54
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175881-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 20:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*66 - 120*		*11/12/22 20:46*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/12/22 19:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/12/22 19:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 19:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/12/22 19:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 19:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/12/22 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/12/22 19:01*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/12/22 19:01*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/12/22 19:01*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/12/22 19:01*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175868-B-1 MS	Matrix Spike	92	104	99	99
240-175868-B-1 MSD	Matrix Spike Duplicate	90	101	98	97
240-175881-1	TRIP BLANK_30	93	103	99	98
240-175881-2	MW-143S_110222	91	102	99	96
LCS 240-551672/5	Lab Control Sample	92	103	97	97
MB 240-551672/8	Method Blank	89	101	96	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175790-G-5 MS	Matrix Spike	114
240-175790-M-5 MSD	Matrix Spike Duplicate	119
240-175881-2	MW-143S_110222	115
LCS 240-551688/3	Lab Control Sample	117
MB 240-551688/4	Method Blank	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551672/8
Matrix: Water
Analysis Batch: 551672

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/12/22 10:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/12/22 10:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 10:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/12/22 10:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 10:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/12/22 10:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/12/22 10:53*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/12/22 10:53*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/12/22 10:53*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/12/22 10:53*	*1*

Lab Sample ID: LCS 240-551672/5
Matrix: Water
Analysis Batch: 551672

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.8		ug/L		94	63 - 134
cis-1,2-Dichloroethene	20.0	18.6		ug/L		93	77 - 123
Tetrachloroethene	20.0	20.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	20.0	18.4		ug/L		92	75 - 124
Trichloroethene	20.0	18.9		ug/L		94	70 - 122
Vinyl chloride	20.0	17.3		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-175868-B-1 MS
Matrix: Water
Analysis Batch: 551672

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10	U	200	181		ug/L		91	56 - 135
cis-1,2-Dichloroethene	10	U	200	184		ug/L		92	66 - 128
Tetrachloroethene	10	U	200	184		ug/L		92	62 - 131
trans-1,2-Dichloroethene	10	U	200	176		ug/L		88	56 - 136
Trichloroethene	420		200	573		ug/L		75	61 - 124
Vinyl chloride	10	U	200	165		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175868-B-1 MS
Matrix: Water
Analysis Batch: 551672

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-175868-B-1 MSD
Matrix: Water
Analysis Batch: 551672

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	200	195		ug/L		97	56 - 135	7	26
cis-1,2-Dichloroethene	10	U	200	199		ug/L		99	66 - 128	8	14
Tetrachloroethene	10	U	200	205		ug/L		102	62 - 131	11	20
trans-1,2-Dichloroethene	10	U	200	191		ug/L		96	56 - 136	8	15
Trichloroethene	420		200	598		ug/L		87	61 - 124	4	15
Vinyl chloride	10	U	200	179		ug/L		89	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551688/4
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 17:07*	*1*

Lab Sample ID: LCS 240-551688/3
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.52		ug/L		95	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*

Lab Sample ID: 240-175790-G-5 MS
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.82		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*

Lab Sample ID: 240-175790-M-5 MSD
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	10	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

GC/MS VOA

Analysis Batch: 551672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175881-1	TRIP BLANK_30	Total/NA	Water	8260D	
240-175881-2	MW-143S_110222	Total/NA	Water	8260D	
MB 240-551672/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551672/5	Lab Control Sample	Total/NA	Water	8260D	
240-175868-B-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-175868-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 551688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175881-2	MW-143S_110222	Total/NA	Water	8260D SIM	
MB 240-551688/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551688/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175790-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175790-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Client Sample ID: TRIP BLANK_30

Lab Sample ID: 240-175881-1

Date Collected: 11/02/22 00:00

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551672	HMB	EET CAN	11/12/22 18:37

Client Sample ID: MW-143S_110222

Lab Sample ID: 240-175881-2

Date Collected: 11/02/22 14:54

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551672	HMB	EET CAN	11/12/22 19:01
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 20:46

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175881-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Jehua Ferreira	TAT if different from below: 10 day (3 weeks, 2 weeks, 1 week, 2 days, 1 day)		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zinc NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_30	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-143S_110222	11/02/22	14:54		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-175881 Chain of Custody

Possible Hazard Identification: Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client, Disposal By Lab, Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~Stark Road~~ 12189 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

11/04/22

	Company	Date/Time		Company	Date/Time
Relinquished by: Jehua Ferreira	Arcadis	16:40	Received by: Novi Cold Storage	Arcadis	11/02/22 16:40
Relinquished by: Sommer Hug	Arcadis	11/3/22 1500	Received by:	FEDEX	11/3/22 1500
Relinquished by:	FEDEX	11/3/22 1536	Received in Laboratory by:	TESTNC	11-4-22 0940

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11/16/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 175881
Barberton Facility

Client Arcadis Site Name LTP

Cooler unpacked by: Irma

Cooler Received on _____ Opened on _____

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	(Yes)	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) MW-143S 1x40mL vial WGS were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 175881

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.5	1.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175881-1
Sample date: 2022-11-02
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175881-1

		Sample Name:	TRIP BLANK_30				MW-143S_110222			
		Lab Sample ID:	2401758811				2401758812			
		Sample Date:	11/2/2022				11/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

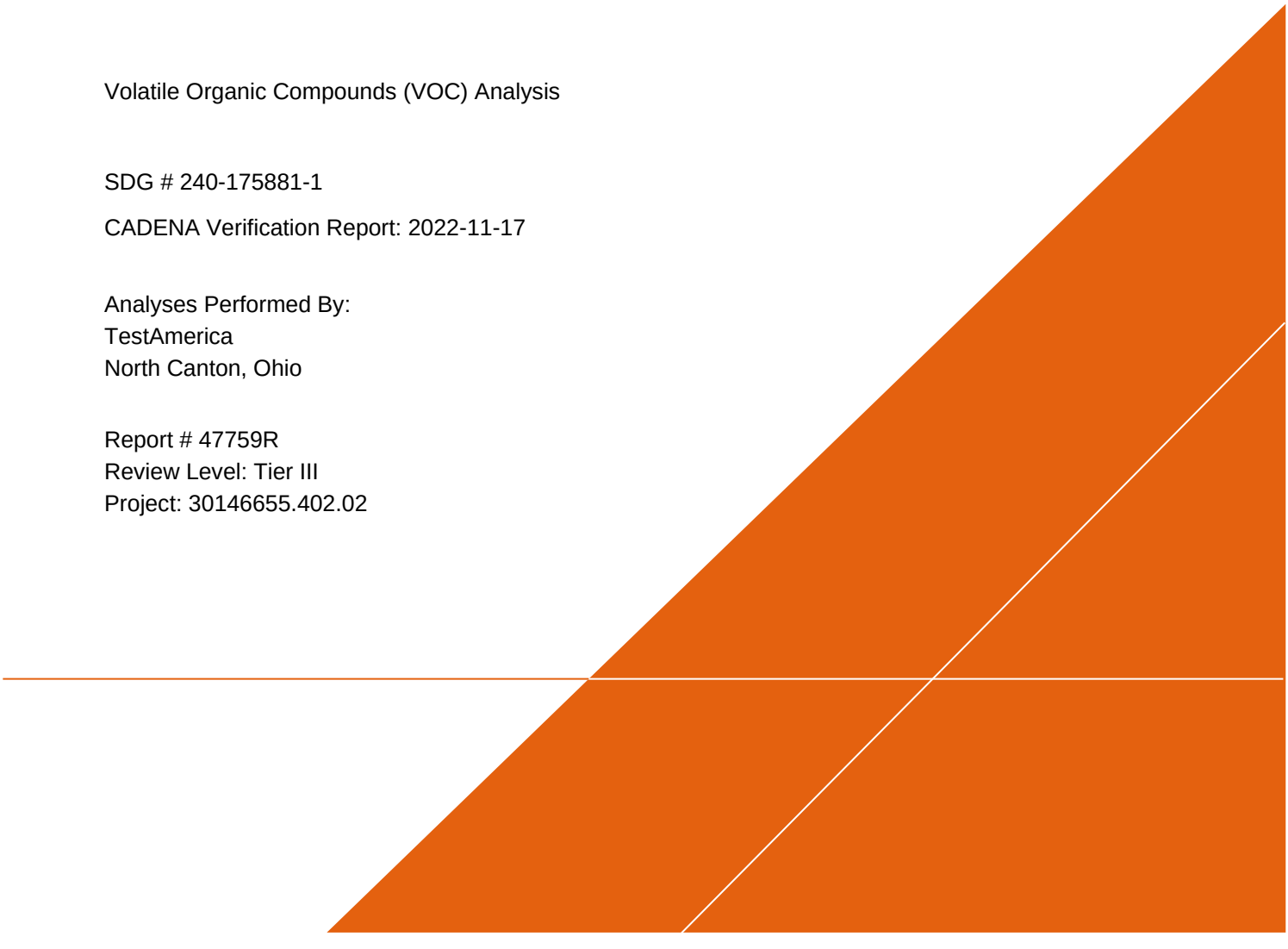
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175881-1

CADENA Verification Report: 2022-11-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47759R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175881-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_30	240-175881-1	Water	11/02/22		X	
MW-143S_110222	240-175881-2	Water	11/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Jehica Ferrem	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_30	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1435_110222	11/02/22	14:54		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-175881 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~Stark Rd Powell~~ 12189 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

11/04/22

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Jehica Ferrem	Arcadis	16:40	Novi Cold Storage	Arcadis	11/02/22 16:40
Sommer Hug	Arcadis	11/3/22 1500			11/3/22 1500
		11/3/22 1536	Received in Laboratory by:	EETNC	11-4-22 0940

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Client Sample ID: TRIP BLANK_30
Lab Sample ID: 240-175881-1

Date Collected: 11/02/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/12/22 18:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/12/22 18:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 18:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/12/22 18:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 18:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/12/22 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/12/22 18:37*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/12/22 18:37*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/12/22 18:37*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/12/22 18:37*	*1*

Client Sample ID: MW-143S_110222
Lab Sample ID: 240-175881-2

Date Collected: 11/02/22 14:54
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 20:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*66 - 120*		*11/12/22 20:46*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/12/22 19:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/12/22 19:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 19:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/12/22 19:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/12/22 19:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/12/22 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/12/22 19:01*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/12/22 19:01*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/12/22 19:01*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/12/22 19:01*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 8:04:30 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176466-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176466-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176466-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176466-1	TRIP BLANK_50	Water	11/08/22 00:00	11/15/22 10:00
240-176466-2	MW-115S_110822	Water	11/08/22 11:36	11/15/22 10:00
240-176466-3	DUP-12	Water	11/08/22 00:00	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Client Sample ID: TRIP BLANK_50 — Lab Sample ID: 240-176466-1

No Detections.

Client Sample ID: MW-115S_110822 — Lab Sample ID: 240-176466-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.52	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-12 — Lab Sample ID: 240-176466-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.51	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Client Sample ID: TRIP BLANK_50
Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176466-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/17/22 18:31*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/17/22 18:31*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 18:31*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 18:31*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Client Sample ID: MW-115S_110822
Date Collected: 11/08/22 11:36
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176466-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/17/22 19:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:56	1
Vinyl chloride	**0.52**	**J**	1.0	0.45	ug/L			11/17/22 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/17/22 18:56*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/17/22 18:56*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/17/22 18:56*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 18:56*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Client Sample ID: DUP-12
Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176466-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 20:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/17/22 20:07*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 19:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 19:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 19:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:20	1
Vinyl chloride	**0.51**	**J**	1.0	0.45	ug/L			11/17/22 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/17/22 19:20*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/17/22 19:20*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 19:20*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/17/22 19:20*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176179-B-3 MS	Matrix Spike	90	98	95	95
240-176179-B-3 MSD	Matrix Spike Duplicate	88	99	97	96
240-176466-1	TRIP BLANK_50	94	101	100	97
240-176466-2	MW-115S_110822	95	101	98	97
240-176466-3	DUP-12	90	97	96	93
LCS 240-552419/5	Lab Control Sample	92	102	98	98
MB 240-552419/8	Method Blank	91	99	97	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176466-2	MW-115S_110822	79
240-176466-3	DUP-12	82
500-225128-C-10 MS	Matrix Spike	81
500-225128-C-10 MSD	Matrix Spike Duplicate	79
LCS 240-552321/3	Lab Control Sample	80
MB 240-552321/4	Method Blank	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552419/8
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 12:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 12:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 12:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 12:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/17/22 12:47*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/17/22 12:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/17/22 12:47*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/17/22 12:47*	*1*

Lab Sample ID: LCS 240-552419/5
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.9		ug/L		95	63 - 134
cis-1,2-Dichloroethene	20.0	19.7		ug/L		99	77 - 123
Tetrachloroethene	20.0	20.7		ug/L		103	76 - 123
trans-1,2-Dichloroethene	20.0	18.7		ug/L		94	75 - 124
Trichloroethene	20.0	19.7		ug/L		98	70 - 122
Vinyl chloride	20.0	18.0		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176179-B-3 MS
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	400	342		ug/L		85	56 - 135
cis-1,2-Dichloroethene	91		400	443		ug/L		88	66 - 128
Tetrachloroethene	10	J	400	353		ug/L		86	62 - 131
trans-1,2-Dichloroethene	20	U	400	336		ug/L		84	56 - 136
Trichloroethene	25		400	367		ug/L		86	61 - 124
Vinyl chloride	20	U	400	325		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176179-B-3 MS
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: 240-176179-B-3 MSD
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	357		ug/L		89	56 - 135	4	26
cis-1,2-Dichloroethene	91		400	463		ug/L		93	66 - 128	4	14
Tetrachloroethene	10	J	400	382		ug/L		93	62 - 131	8	20
trans-1,2-Dichloroethene	20	U	400	360		ug/L		90	56 - 136	7	15
Trichloroethene	25		400	386		ug/L		90	61 - 124	5	15
Vinyl chloride	20	U	400	348		ug/L		87	43 - 157	7	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		62 - 137
4-Bromofluorobenzene (Surr)	99		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	96		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552321/4
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 11:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	81		66 - 120		11/17/22 11:09	1

Lab Sample ID: LCS 240-552321/3
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.63		ug/L		96	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		66 - 120

Lab Sample ID: 500-225128-C-10 MS
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	83		20.0	105	4	ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MSD
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	83		20.0	104	4	ug/L		108	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

GC/MS VOA

Analysis Batch: 552321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176466-2	MW-115S_110822	Total/NA	Water	8260D SIM	
240-176466-3	DUP-12	Total/NA	Water	8260D SIM	
MB 240-552321/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552321/3	Lab Control Sample	Total/NA	Water	8260D SIM	
500-225128-C-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-225128-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176466-1	TRIP BLANK_50	Total/NA	Water	8260D	
240-176466-2	MW-115S_110822	Total/NA	Water	8260D	
240-176466-3	DUP-12	Total/NA	Water	8260D	
MB 240-552419/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552419/5	Lab Control Sample	Total/NA	Water	8260D	
240-176179-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-176179-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Client Sample ID: TRIP BLANK_50

Lab Sample ID: 240-176466-1
Matrix: Water
Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552419	HMB	EET CAN	11/17/22 18:31

Client Sample ID: MW-115S_110822

Lab Sample ID: 240-176466-2
Matrix: Water
Date Collected: 11/08/22 11:36
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552419	HMB	EET CAN	11/17/22 18:56
Total/NA	Analysis	8260D SIM		1	552321	CS	EET CAN	11/17/22 19:42

Client Sample ID: DUP-12

Lab Sample ID: 240-176466-3
Matrix: Water
Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552419	HMB	EET CAN	11/17/22 19:20
Total/NA	Analysis	8260D SIM		1	552321	CS	EET CAN	11/17/22 20:07

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176466-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 50		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1155-110822	11/08/22	1136		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-12	11/08/22	—		X						6					N	G	X	X	X	X	X	X	X	

240-176466 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12070 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/10/22 1700	Novi Cold Storage	Arcadis	11/10/22 1700
	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/14/22 0950			11/14/22 0950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/14/22 0917			11-15-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176466
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Confirmed	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WT-NC-099

Login # : 176466

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.6	3.6	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	1.6	1.6	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/22/2022 8:04:30 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176466-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176466-1

		Sample Name:	TRIP BLANK_50				MW-115S_110822				DUP-12			
		Lab Sample ID:	2401764661				2401764662				2401764663			
		Sample Date:	11/8/2022				11/8/2022				11/8/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	0.52	1.0	ug/l	J	0.51	1.0	ug/l	J
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

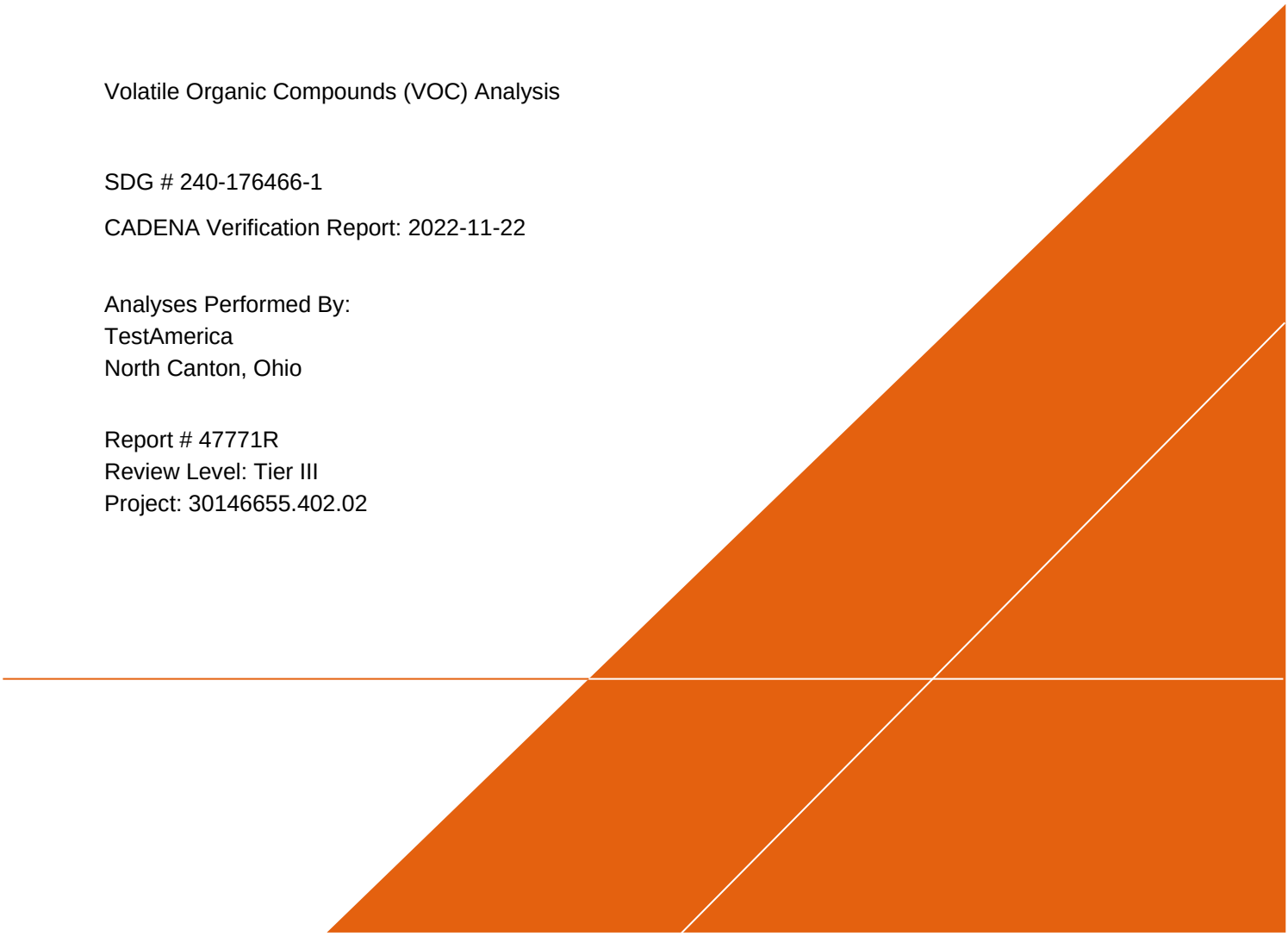
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176466-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47771R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176466-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_50	240-176466-1	Water	11/08/22		X	
MW-115S_110822	240-176466-2	Water	11/08/22		X	X
DUP-12	240-176466-3	Water	11/08/22	MW-115S_110822	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-115S_110822 / DUP-12	Vinyl chloride	0.52 J	0.51 J	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 05, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 06, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:	10 day		Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac) NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 50		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1155_110822	11/08/22	1136		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-12	11/08/22	—		X						6					N	G	X	X	X	X	X	X	X	

240-176466 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12070 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/10/22 1700	Novi Cold Storage	Arcadis	11/10/22 1700
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/14/22 0950			11/14/22 0950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/14/22 0952			11-15-22 10:00

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Client Sample ID: TRIP BLANK_50

Lab Sample ID: 240-176466-1

Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/17/22 18:31*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/17/22 18:31*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 18:31*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 18:31*	*1*

Client Sample ID: MW-115S_110822

Lab Sample ID: 240-176466-2

Date Collected: 11/08/22 11:36
Date Received: 11/15/22 10:00

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/17/22 19:42*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:56	1
Vinyl chloride	**0.52**	**J**	1.0	0.45	ug/L			11/17/22 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/17/22 18:56*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/17/22 18:56*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/17/22 18:56*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 18:56*	*1*

Client Sample ID: DUP-12

Lab Sample ID: 240-176466-3

Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 20:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/17/22 20:07*	*1*

Client Sample ID: DUP-12
Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176466-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 19:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 19:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 19:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:20	1
Vinyl chloride	**0.51**	**J**	1.0	0.45	ug/L			11/17/22 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/17/22 19:20*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/17/22 19:20*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 19:20*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/17/22 19:20*	*1*

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176527-1
Sample date: 2022-11-14
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176527-1

		Sample Name:	TRIP BLANK_219				MW-123S_111422			
		Lab Sample ID:	2401765271				2401765272			
		Sample Date:	11/14/2022				11/14/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.2	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:35:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176527-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176527-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176527-1

Receipt

The samples were received on 11/16/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.9°C

GC/MS VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176527-1	TRIP BLANK_219	Water	11/14/22 00:00	11/16/22 08:00
240-176527-2	MW-123S_111422	Water	11/14/22 14:13	11/16/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Client Sample ID: TRIP BLANK_219 — Lab Sample ID: 240-176527-1

No Detections.

Client Sample ID: MW-123S_111422 — Lab Sample ID: 240-176527-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Client Sample ID: TRIP BLANK_219
Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176527-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 13:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 13:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 13:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/23/22 13:55*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/23/22 13:55*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 13:55*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 13:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Client Sample ID: MW-123S_111422
Date Collected: 11/14/22 14:13
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176527-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 01:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/23/22 01:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 18:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 18:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 18:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:56	1
Vinyl chloride	**3.2**		1.0	0.45	ug/L			11/23/22 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 18:56*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/23/22 18:56*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 18:56*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 18:56*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176484-J-4 MS	Matrix Spike	97	92	98	90
240-176484-P-4 MSD	Matrix Spike Duplicate	95	90	98	89
240-176527-1	TRIP BLANK_219	98	91	98	86
240-176527-2	MW-123S_111422	99	89	98	86
LCS 240-553297/4	Lab Control Sample	94	94	97	91
MB 240-553297/7	Method Blank	97	90	98	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176527-2	MW-123S_111422	79
240-176530-B-2 MS	Matrix Spike	79
240-176530-B-2 MSD	Matrix Spike Duplicate	81
LCS 240-553220/3	Lab Control Sample	79
MB 240-553220/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553297/7
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 11:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 11:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 11:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 11:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 11:50*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 11:50*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 11:50*	*1*

Lab Sample ID: LCS 240-553297/4
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.6		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.4		ug/L		90	75 - 124
Trichloroethene	25.0	22.3		ug/L		89	70 - 122
Vinyl chloride	12.5	13.2		ug/L		105	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	22.5		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	21.2		ug/L		85	61 - 124
Vinyl chloride	2.0		12.5	13.0		ug/L		89	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-176484-P-4 MSD
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.5		ug/L		82	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.0		ug/L		80	61 - 124	6	15
Vinyl chloride	2.0		12.5	12.7		ug/L		86	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553220/5
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 18:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/22/22 18:19*	*1*

Lab Sample ID: LCS 240-553220/3
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.37		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MS
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MSD
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.85		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

GC/MS VOA

Analysis Batch: 553220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176527-2	MW-123S_111422	Total/NA	Water	8260D SIM	
MB 240-553220/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553220/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176530-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176530-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176527-1	TRIP BLANK_219	Total/NA	Water	8260D	
240-176527-2	MW-123S_111422	Total/NA	Water	8260D	
MB 240-553297/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553297/4	Lab Control Sample	Total/NA	Water	8260D	
240-176484-J-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176484-P-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Client Sample ID: TRIP BLANK_219

Lab Sample ID: 240-176527-1

Date Collected: 11/14/22 00:00

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 13:55

Client Sample ID: MW-123S_111422

Lab Sample ID: 240-176527-2

Date Collected: 11/14/22 14:13

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 18:56
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/23/22 01:30

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176527-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

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TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Celina Ferrem	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_219	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1235_111422	11/14/22	14:13		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176527 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12075 Brewster

Submit all results through Cadena at itomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Celina Ferrem	Arcadis	11/15/22	Night Cold Storage	Arcadis	11/14/22 16:20
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/15/22 0900		EETA	11/15/22 0900
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/15/22 1145	Rachelle Hamlet	EETNC	11-16 22 800

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11/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176527
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-16-22 Opened on 11-16-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042010	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

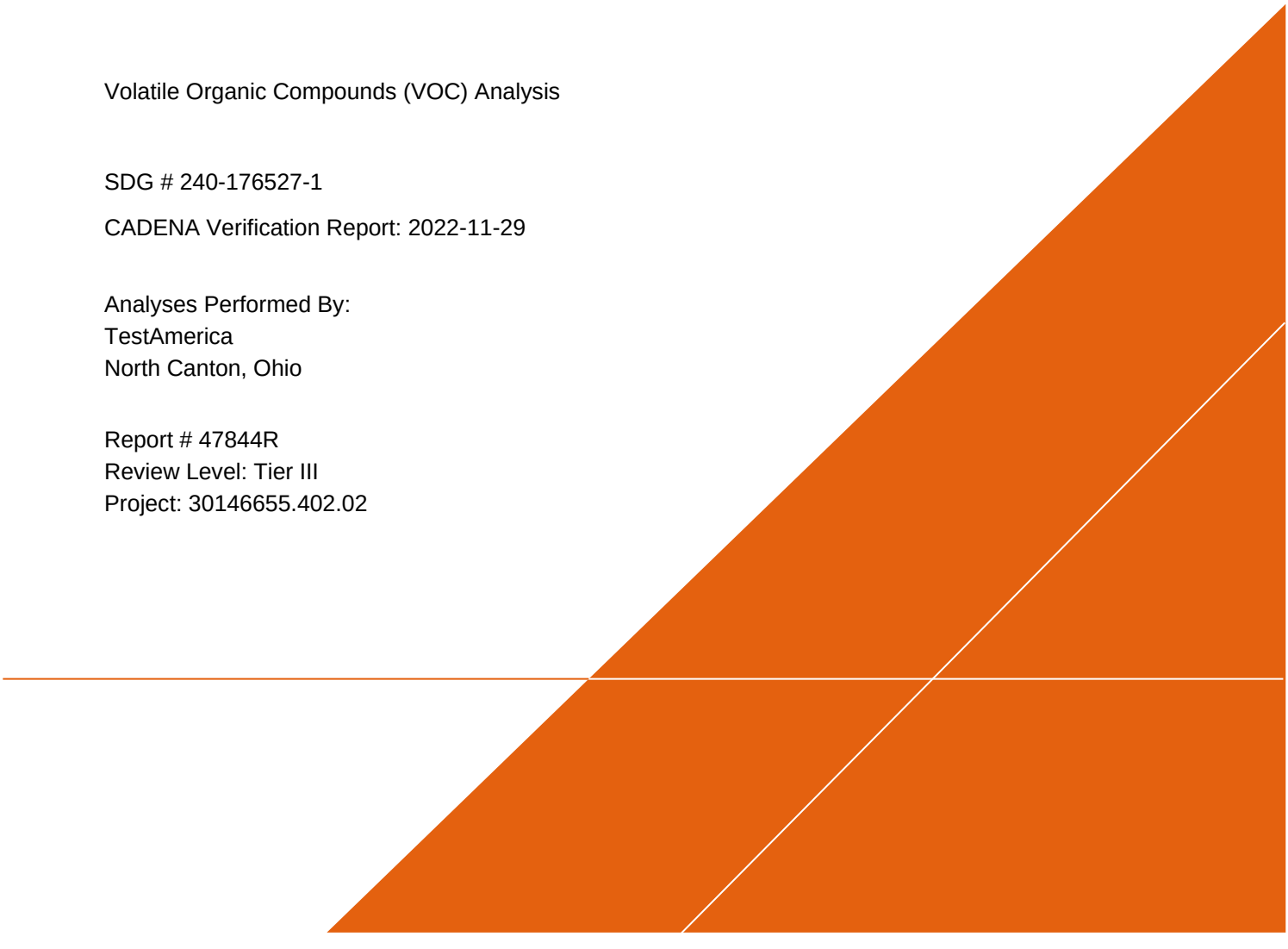
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176527-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47844R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176527-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_219	240-176527-1	Water	11/14/22		X	
MW-123S_111422	240-176527-2	Water	11/14/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 07, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

3.9 / 3.9

TestAmerica
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TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehua Ferrem	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_219	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1235_111422	11/14/22	14:13		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176527 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12075 Brewster

Submit all results through Cadena at itomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by: Lehua Ferrem	Arcadis	11/12/22 (E)	Received by: Nagi Cold Storage	Arcadis	11/14/22 16:20
Relinquished by:	ARCADIS	11/15/22 0900	Received by:	EEA	11/15/22 0900
Relinquished by	EEA	11/15/22 1145	Received in Laboratory by: Rachell Caraleo	EESTNC	11-16-22 800

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11/29/2022
7:34 AM

Client Sample ID: TRIP BLANK_219
Lab Sample ID: 240-176527-1
Date Collected: 11/14/22 00:00
Matrix: Water
Date Received: 11/16/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 13:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 13:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 13:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/23/22 13:55*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/23/22 13:55*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 13:55*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 13:55*	*1*

Client Sample ID: MW-123S_111422
Lab Sample ID: 240-176527-2
Date Collected: 11/14/22 14:13
Matrix: Water
Date Received: 11/16/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 01:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/23/22 01:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 18:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 18:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 18:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:56	1
Vinyl chloride	**3.2**		1.0	0.45	ug/L			11/23/22 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 18:56*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/23/22 18:56*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 18:56*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 18:56*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:33:43 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176524-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176524-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176524-1

Receipt
The samples were received on 11/16/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176524-1	TRIP BLANK_220	Water	11/14/22 00:00	11/16/22 08:00
240-176524-2	MW-148S_111422	Water	11/14/22 11:57	11/16/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Client Sample ID: TRIP BLANK_220 — Lab Sample ID: 240-176524-1

No Detections.

Client Sample ID: MW-148S_111422 — Lab Sample ID: 240-176524-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Client Sample ID: TRIP BLANK_220
Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176524-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 13:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 13:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 13:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 13:05*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/23/22 13:05*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/23/22 13:05*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 13:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Client Sample ID: MW-148S_111422
Date Collected: 11/14/22 11:57
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176524-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 23:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/22/22 23:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:06	1
Vinyl chloride	**2.1**		1.0	0.45	ug/L			11/23/22 18:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 18:06*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/23/22 18:06*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 18:06*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/23/22 18:06*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176484-J-4 MS	Matrix Spike	97	92	98	90
240-176484-P-4 MSD	Matrix Spike Duplicate	95	90	98	89
240-176524-1	TRIP BLANK_220	97	91	97	86
240-176524-2	MW-148S_111422	99	86	98	88
LCS 240-553297/4	Lab Control Sample	94	94	97	91
MB 240-553297/7	Method Blank	97	90	98	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176524-2	MW-148S_111422	78
240-176530-B-2 MS	Matrix Spike	79
240-176530-B-2 MSD	Matrix Spike Duplicate	81
LCS 240-553220/3	Lab Control Sample	79
MB 240-553220/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553297/7
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 11:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 11:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 11:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 11:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 11:50*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 11:50*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 11:50*	*1*

Lab Sample ID: LCS 240-553297/4
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.6		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.4		ug/L		90	75 - 124
Trichloroethene	25.0	22.3		ug/L		89	70 - 122
Vinyl chloride	12.5	13.2		ug/L		105	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	22.5		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	21.2		ug/L		85	61 - 124
Vinyl chloride	2.0		12.5	13.0		ug/L		89	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: 240-176484-P-4 MSD
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.5		ug/L		82	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.0		ug/L		80	61 - 124	6	15
Vinyl chloride	2.0		12.5	12.7		ug/L		86	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	89		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553220/5
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 18:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	77		66 - 120		11/22/22 18:19	1

Lab Sample ID: LCS 240-553220/3
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.37		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		66 - 120

Lab Sample ID: 240-176530-B-2 MS
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MSD
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.85		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

GC/MS VOA

Analysis Batch: 553220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176524-2	MW-148S_111422	Total/NA	Water	8260D SIM	
MB 240-553220/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553220/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176530-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176530-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176524-1	TRIP BLANK_220	Total/NA	Water	8260D	
240-176524-2	MW-148S_111422	Total/NA	Water	8260D	
MB 240-553297/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553297/4	Lab Control Sample	Total/NA	Water	8260D	
240-176484-J-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176484-P-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Client Sample ID: TRIP BLANK_220

Lab Sample ID: 240-176524-1

Date Collected: 11/14/22 00:00

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 13:05

Client Sample ID: MW-148S_111422

Lab Sample ID: 240-176524-2

Date Collected: 11/14/22 11:57

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 18:06
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/22/22 23:48

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176524-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

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TestAmerica
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TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Olivia Ferreira	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_220	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1485_111422	11/14/22	11:57		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176524 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12088 Brewster
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Olivia Ferreira	Arcadis	11/14/22 16:20	Received by: [redacted] Novi Cold Storage	Arcadis	11/14/22 16:20
Relinquished by: [redacted]	ARCADIS	11/15/22 0900	Received by: [redacted]	EEA	11/15/22 0900
Relinquished by: [redacted]	EEA	11/15/22 1145	Received in Laboratory by: [redacted]	TESTNC	11-16-22 800

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11/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 176524**
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-16-22 Opened on 11-16-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104 2016	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176524-1
Sample date: 2022-11-14
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176524-1

		Sample Name:	TRIP BLANK_220				MW-148S_111422			
		Lab Sample ID:	2401765241				2401765242			
		Sample Date:	11/14/2022				11/14/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	2.1	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

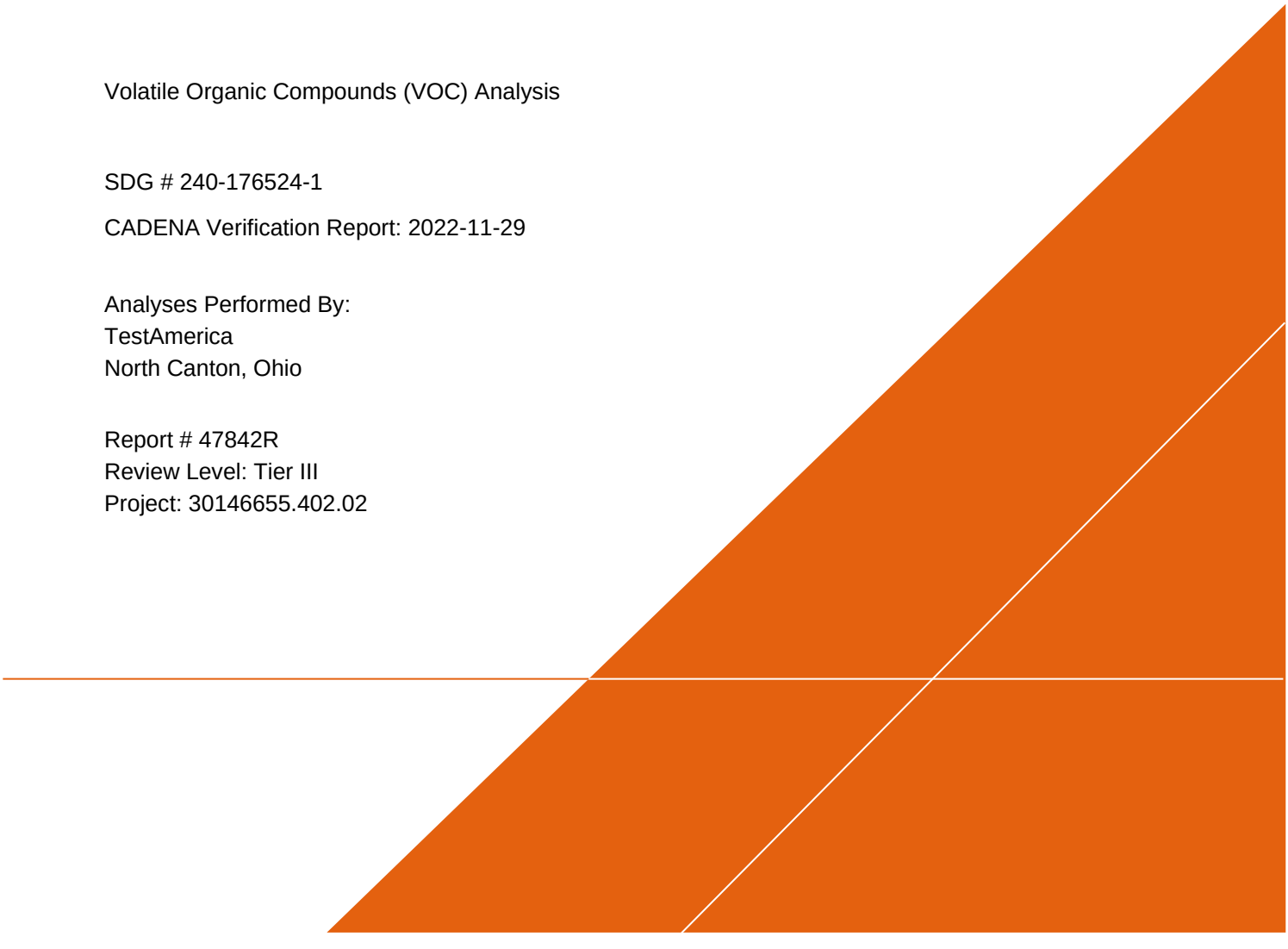
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176524-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47842R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176524-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_220	240-176524-1	Water	11/14/22		X	
MW-148S_111422	240-176524-2	Water	11/14/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 07, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

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TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Ulricia Ferreira	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_220	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1485_111422	11/14/22	11:57		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176524 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12088 Brewster
Submit all results through Cadena at jfomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ulricia Ferreira	Arcadis	11/14/22 16:20	Novi Cold Storage	Arcadis	11/14/22 16:20
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/15/22 0900		EETA	11/15/22 0900
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Li Hao	EETA	11/15/22 1145		EETNC	11-16-22 800

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Client Sample ID: TRIP BLANK_220
Lab Sample ID: 240-176524-1
Date Collected: 11/14/22 00:00
Matrix: Water
Date Received: 11/16/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 13:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 13:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 13:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 13:05*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/23/22 13:05*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/23/22 13:05*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 13:05*	*1*

Client Sample ID: MW-148S_111422
Lab Sample ID: 240-176524-2
Date Collected: 11/14/22 11:57
Matrix: Water
Date Received: 11/16/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 23:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/22/22 23:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 18:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 18:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:06	1
Vinyl chloride	**2.1**		1.0	0.45	ug/L			11/23/22 18:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 18:06*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/23/22 18:06*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 18:06*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/23/22 18:06*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/23/2022 9:00:37 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176464-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176464-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176464-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.3°C and 3.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176464-1	TRIP BLANK_21	Water	11/09/22 00:00	11/15/22 10:00
240-176464-2	MW-117S_110922	Water	11/09/22 12:26	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Client Sample ID: TRIP BLANK_21 — Lab Sample ID: 240-176464-1

No Detections.

Client Sample ID: MW-117S_110922 — Lab Sample ID: 240-176464-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Client Sample ID: TRIP BLANK_21
Date Collected: 11/09/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176464-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 13:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 13:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 13:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 13:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/18/22 13:22*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/18/22 13:22*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/18/22 13:22*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/18/22 13:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Client Sample ID: MW-117S_110922
Date Collected: 11/09/22 12:26
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176464-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/17/22 18:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 15:27*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/18/22 15:27*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 15:27*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176464-1	TRIP BLANK_21	97	78	94	90
240-176464-2	MW-117S_110922	102	74	94	94
240-176475-D-4 MSD	Matrix Spike Duplicate	86	96	97	84
240-176475-E-4 MS	Matrix Spike	86	95	98	87
LCS 240-552675/5	Lab Control Sample	86	93	97	86
MB 240-552675/8	Method Blank	96	74	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176464-2	MW-117S_110922	76
500-225128-C-10 MS	Matrix Spike	81
500-225128-C-10 MSD	Matrix Spike Duplicate	79
LCS 240-552321/3	Lab Control Sample	80
MB 240-552321/4	Method Blank	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552675/8
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 12:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 12:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 12:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/18/22 12:32*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 12:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 12:32*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/18/22 12:32*	*1*

Lab Sample ID: LCS 240-552675/5
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.9		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	24.3		ug/L		97	77 - 123
Tetrachloroethene	25.0	24.0		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	24.1		ug/L		97	75 - 124
Trichloroethene	25.0	21.9		ug/L		88	70 - 122
Vinyl chloride	12.5	12.9		ug/L		103	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	20.0		ug/L		80	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	3	15
Trichloroethene	1.0	U	25.0	18.0		ug/L		72	61 - 124	5	15
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176475-E-4 MS
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	18.9		ug/L		76	61 - 124
Vinyl chloride	1.0	U	25.0	23.3		ug/L		93	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552321/4
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 11:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/17/22 11:09*	*1*

Lab Sample ID: LCS 240-552321/3
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.63		ug/L		96	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MS
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	83		20.0	105	4	ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MSD
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	83		20.0	104	4	ug/L		108	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

GC/MS VOA

Analysis Batch: 552321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176464-2	MW-117S_110922	Total/NA	Water	8260D SIM	
MB 240-552321/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552321/3	Lab Control Sample	Total/NA	Water	8260D SIM	
500-225128-C-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-225128-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176464-1	TRIP BLANK_21	Total/NA	Water	8260D	
240-176464-2	MW-117S_110922	Total/NA	Water	8260D	
MB 240-552675/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552675/5	Lab Control Sample	Total/NA	Water	8260D	
240-176475-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176475-E-4 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Client Sample ID: TRIP BLANK_21

Lab Sample ID: 240-176464-1

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 13:22

Client Sample ID: MW-117S_110922

Lab Sample ID: 240-176464-2

Date Collected: 11/09/22 12:26

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 15:27
Total/NA	Analysis	8260D SIM		1	552321	CS	EET CAN	11/17/22 18:51

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176464-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
6 TRIP BLANK_21	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
6 MW-1175_110922	11/09/22	1226		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176464 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12089 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/10/22 1700	Novi cold storage	Arcadis	11/10/22 1700
	ARCADIS	11/14/22 0950			11/14/22 0950
		11/14/22 0945			11-15-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176464
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Charlie

Cooler Received on 11-15-22 Opened on 11-15-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	Yes	No
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cal Med	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

11-16-22

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176464

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/23/2022 9:00:37 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 23, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176464-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-23
Initial Data Verification completed by CADENA: 2022-11-23
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176464-1

		Sample Name:	TRIP BLANK_21				MW-117S_110922			
		Lab Sample ID:	2401764641				2401764642			
		Sample Date:	11/9/2022				11/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

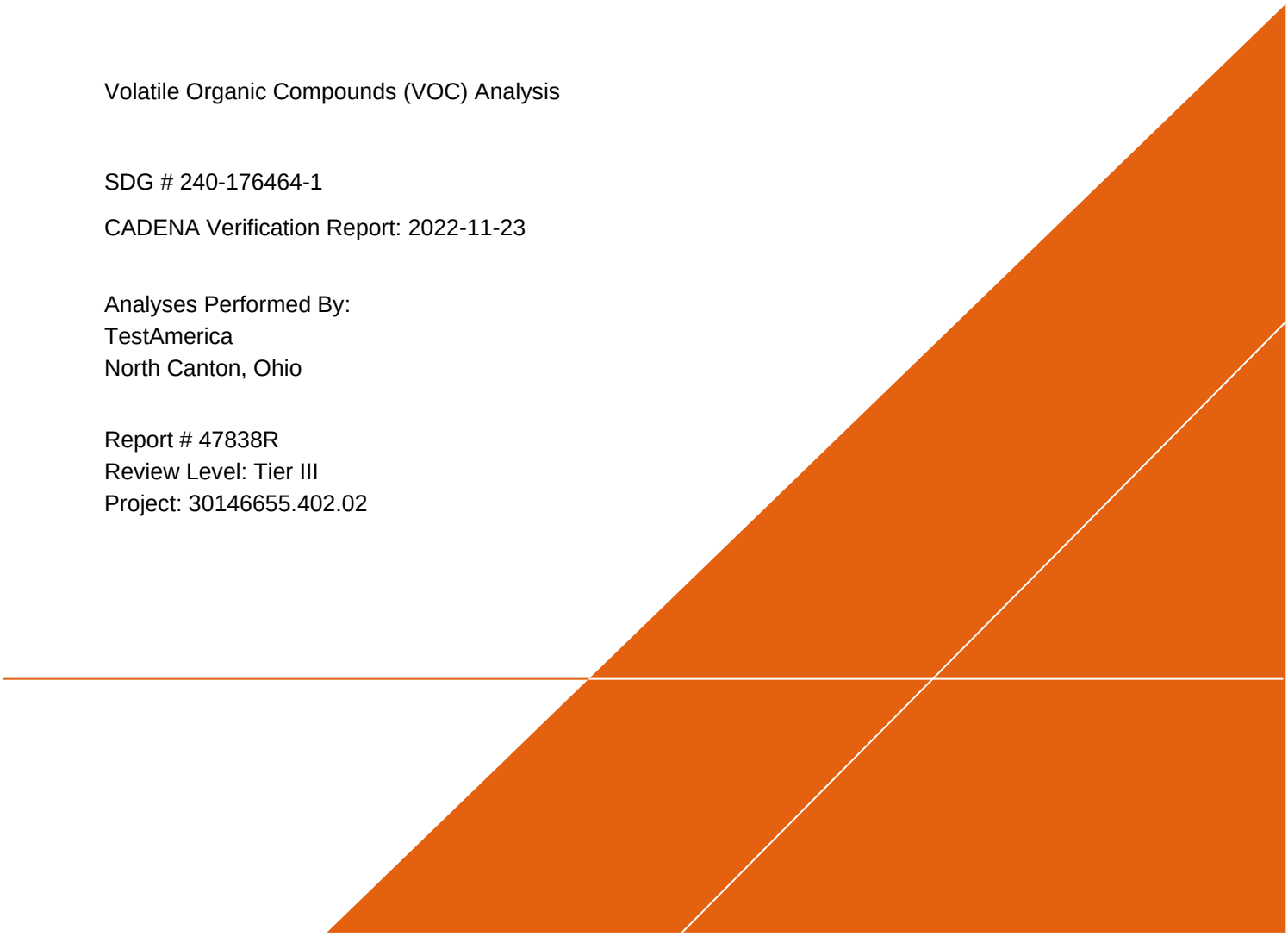
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176464-1

CADENA Verification Report: 2022-11-23

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47838R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176464-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_21	240-176464-1	Water	11/09/22		X	
MW-117S_110922	240-176464-2	Water	11/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 06, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
6 TRIP BLANK_21	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
6 MW-1175-110922	11/09/22	1226		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176464 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12089 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/10/22 1700	Novi cold storage	Arcadis	11/10/22 1700
[signature]	ARCADIS	11/14/22 0950	[signature]	[signature]	11/14/22 0950
[signature]	[signature]	11/14/22 0950	Received in Laboratory by: [signature]	[signature]	11-15-22 10:00

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Client Sample ID: TRIP BLANK_21
Lab Sample ID: 240-176464-1
Date Collected: 11/09/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 13:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 13:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 13:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 13:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 13:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/18/22 13:22*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/18/22 13:22*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/18/22 13:22*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/18/22 13:22*	*1*

Client Sample ID: MW-117S_110922
Lab Sample ID: 240-176464-2
Date Collected: 11/09/22 12:26
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/17/22 18:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 15:27*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/18/22 15:27*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 15:27*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:34:21 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176526-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176526-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176526-1

Receipt
The samples were received on 11/16/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176526-1	TRIP BLANK_213	Water	11/14/22 00:00	11/16/22 08:00
240-176526-2	MW-151S_111422	Water	11/14/22 15:16	11/16/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Client Sample ID: TRIP BLANK_213 — Lab Sample ID: 240-176526-1

No Detections.

Client Sample ID: MW-151S_111422 — Lab Sample ID: 240-176526-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Client Sample ID: TRIP BLANK_213
Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176526-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 13:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 13:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 13:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 13:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 13:30*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 13:30*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/23/22 13:30*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 13:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Client Sample ID: MW-151S_111422
Date Collected: 11/14/22 15:16
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176526-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 01:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/23/22 01:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:31	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/23/22 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/23/22 18:31*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/23/22 18:31*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 18:31*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 18:31*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176484-J-4 MS	Matrix Spike	97	92	98	90
240-176484-P-4 MSD	Matrix Spike Duplicate	95	90	98	89
240-176526-1	TRIP BLANK_213	97	90	99	87
240-176526-2	MW-151S_111422	100	88	98	87
LCS 240-553297/4	Lab Control Sample	94	94	97	91
MB 240-553297/7	Method Blank	97	90	98	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176526-2	MW-151S_111422	78
240-176530-B-2 MS	Matrix Spike	79
240-176530-B-2 MSD	Matrix Spike Duplicate	81
LCS 240-553220/3	Lab Control Sample	79
MB 240-553220/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553297/7
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 11:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 11:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 11:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 11:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 11:50*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 11:50*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 11:50*	*1*

Lab Sample ID: LCS 240-553297/4
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.6		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.4		ug/L		90	75 - 124
Trichloroethene	25.0	22.3		ug/L		89	70 - 122
Vinyl chloride	12.5	13.2		ug/L		105	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	22.5		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	21.2		ug/L		85	61 - 124
Vinyl chloride	2.0		12.5	13.0		ug/L		89	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-176484-P-4 MSD
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.5		ug/L		82	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.0		ug/L		80	61 - 124	6	15
Vinyl chloride	2.0		12.5	12.7		ug/L		86	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553220/5
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 18:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/22/22 18:19*	*1*

Lab Sample ID: LCS 240-553220/3
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.37		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MS
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MSD
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.85		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

GC/MS VOA

Analysis Batch: 553220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176526-2	MW-151S_111422	Total/NA	Water	8260D SIM	
MB 240-553220/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553220/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176530-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176530-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176526-1	TRIP BLANK_213	Total/NA	Water	8260D	
240-176526-2	MW-151S_111422	Total/NA	Water	8260D	
MB 240-553297/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553297/4	Lab Control Sample	Total/NA	Water	8260D	
240-176484-J-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176484-P-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Client Sample ID: TRIP BLANK_213

Lab Sample ID: 240-176526-1

Date Collected: 11/14/22 00:00

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 13:30

Client Sample ID: MW-151S_111422

Lab Sample ID: 240-176526-2

Date Collected: 11/14/22 15:16

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 18:31
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/23/22 01:05

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176526-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

3.9/3.9

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Lehua Ferrem	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_213	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-151S_111422	11/14/22	15:16		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176526 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12091 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehua Ferrem	Arcadis	11/14/22 16:20	Cold storage	Arcadis	11/14/22 16:20
	ARCADIS	11/15/22 0900		EE-TA	11/15/22 0900
	EE-TA	11/15/22 1145	Rachelle Harried	EESTNC	11-16 22 800

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11/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176526
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-16-22 Opened on 11-16-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes) No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-16

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176526-1
Sample date: 2022-11-14
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176526-1

		Sample Name:	TRIP BLANK_213				MW-151S_111422			
		Lab Sample ID:	2401765261				2401765262			
		Sample Date:	11/14/2022				11/14/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.2	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176526-1

		Sample Name:	TRIP BLANK_213				MW-151S_111422			
		Lab Sample ID:	2401765261				2401765262			
		Sample Date:	11/14/2022				11/14/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.2	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

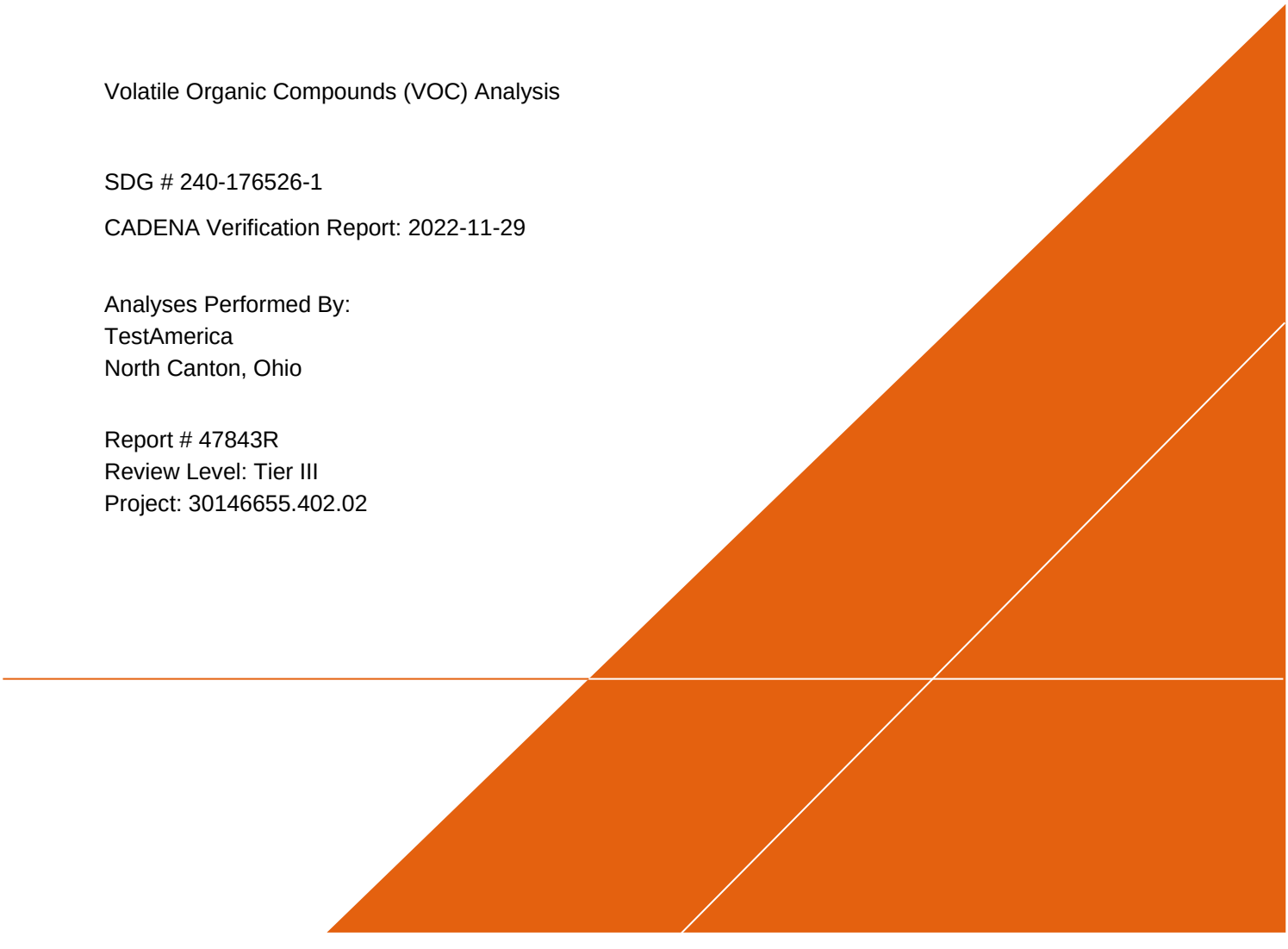
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176526-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47843R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176526-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_213	240-176526-1	Water	11/14/22		X	
MW-151S_111422	240-176526-2	Water	11/14/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 07, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

3.9/3.9

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Ichua Terrem	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
0	TRIP BLANK_213	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
0	MW-151S_111422	11/14/22	15:16		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176526 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12091 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ichua Terrem	Arcadis	11/14/22 16:20	Cold storage	Arcadis	11/14/22 16:20
[illegible]	ARCADIS	11/15/22 0900	[illegible]	EE-TA	11/15/22 0900
[illegible]	EE-TA	11/15/22 1145	Rachelle Harrod	EETNC	11-16-22 800

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Client Sample ID: TRIP BLANK_213
Lab Sample ID: 240-176526-1
Date Collected: 11/14/22 00:00
Matrix: Water
Date Received: 11/16/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 13:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 13:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 13:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 13:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 13:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 13:30*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 13:30*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/23/22 13:30*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 13:30*	*1*

Client Sample ID: MW-151S_111422
Lab Sample ID: 240-176526-2
Date Collected: 11/14/22 15:16
Matrix: Water
Date Received: 11/16/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 01:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/23/22 01:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:31	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/23/22 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/23/22 18:31*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/23/22 18:31*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 18:31*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 18:31*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/30/2022 3:53:12 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176715-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Designee for
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176715-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176715-1

Receipt
The samples were received on 11/18/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176715-1	TRIP BLANK_218	Water	11/16/22 00:00	11/18/22 08:00
240-176715-2	MW-171S_111622	Water	11/16/22 11:22	11/18/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Client Sample ID: TRIP BLANK_218 — Lab Sample ID: 240-176715-1

No Detections.

Client Sample ID: MW-171S_111622 — Lab Sample ID: 240-176715-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Client Sample ID: TRIP BLANK_218
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176715-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/28/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 20:45*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 20:45*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/28/22 20:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Client Sample ID: MW-171S_111622
Date Collected: 11/16/22 11:22
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176715-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/28/22 00:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 21:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 21:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 21:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/28/22 21:10*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 21:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/28/22 21:10*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/28/22 21:10*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176712-B-3 MS	Matrix Spike	97	91	98	91
240-176712-B-3 MSD	Matrix Spike Duplicate	97	92	98	93
240-176715-1	TRIP BLANK_218	101	87	99	88
240-176715-2	MW-171S_111622	101	87	97	89
LCS 240-553589/4	Lab Control Sample	92	91	97	94
MB 240-553589/7	Method Blank	96	90	99	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176715-2	MW-171S_111622	103
240-176715-2 MS	MW-171S_111622	109
240-176715-2 MSD	MW-171S_111622	113
LCS 240-553481/3	Lab Control Sample	98
MB 240-553481/4	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553589/7
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 14:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 14:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 14:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 14:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/28/22 14:54*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/28/22 14:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 14:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 14:54*	*1*

Lab Sample ID: LCS 240-553589/4
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.7		ug/L		99	76 - 123
trans-1,2-Dichloroethene	25.0	23.6		ug/L		95	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	12.5	10.1		ug/L		81	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10	U	250	207		ug/L		83	56 - 135
cis-1,2-Dichloroethene	370		250	599		ug/L		91	66 - 128
Tetrachloroethene	10	U	250	207		ug/L		83	62 - 131
trans-1,2-Dichloroethene	110		250	358		ug/L		98	56 - 136
Trichloroethene	590		250	885	E	ug/L		118	61 - 124
Vinyl chloride	10	U	125	91.1		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MSD
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	229		ug/L		91	56 - 135	10	26
cis-1,2-Dichloroethene	370		250	603		ug/L		93	66 - 128	1	14
Tetrachloroethene	10	U	250	217		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	110		250	356		ug/L		97	56 - 136	1	15
Trichloroethene	590		250	816	E	ug/L		90	61 - 124	8	15
Vinyl chloride	10	U	125	104		ug/L		83	43 - 157	13	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553481/4
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553481/3
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.78		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176715-2 MS
Matrix: Water
Analysis Batch: 553481

Client Sample ID: MW-171S_111622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176715-2 MSD
Matrix: Water
Analysis Batch: 553481

Client Sample ID: MW-171S_111622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

GC/MS VOA

Analysis Batch: 553481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176715-2	MW-171S_111622	Total/NA	Water	8260D SIM	
MB 240-553481/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553481/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176715-2 MS	MW-171S_111622	Total/NA	Water	8260D SIM	
240-176715-2 MSD	MW-171S_111622	Total/NA	Water	8260D SIM	

Analysis Batch: 553589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176715-1	TRIP BLANK_218	Total/NA	Water	8260D	
240-176715-2	MW-171S_111622	Total/NA	Water	8260D	
MB 240-553589/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553589/4	Lab Control Sample	Total/NA	Water	8260D	
240-176712-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-176712-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Client Sample ID: TRIP BLANK_218

Lab Sample ID: 240-176715-1

Date Collected: 11/16/22 00:00

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 20:45

Client Sample ID: MW-171S_111622

Lab Sample ID: 240-176715-2

Date Collected: 11/16/22 11:22

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 21:10
Total/NA	Analysis	8260D SIM		1	553481	CS	EET CAN	11/28/22 00:33

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehcia Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 218	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1715_111622	11/16/22	11 22		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176715 Chain of Custody

Possible Hazard Identification: Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client | Disposal By Lab | Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12101 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehcia Ferreira	Arcadis	11/16/22 14:10	Novi Cold Storage	Arcadis	11/16/22 14:10
	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/17/22 0935		EETA	11/17/22 0935
	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/17/22 941	M. [illegible]	FEC	11/18/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. D. D.

Cooler Received on 11/18/22 Opened on 11/18/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #0104261G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176715-1
Sample date: 2022-11-16
Report received by CADENA: 2022-11-30
Initial Data Verification completed by CADENA: 2022-11-30
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176715-1

		Sample Name:	TRIP BLANK_218				MW-171S_111622			
		Lab Sample ID:	2401767151				2401767152			
		Sample Date:	11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

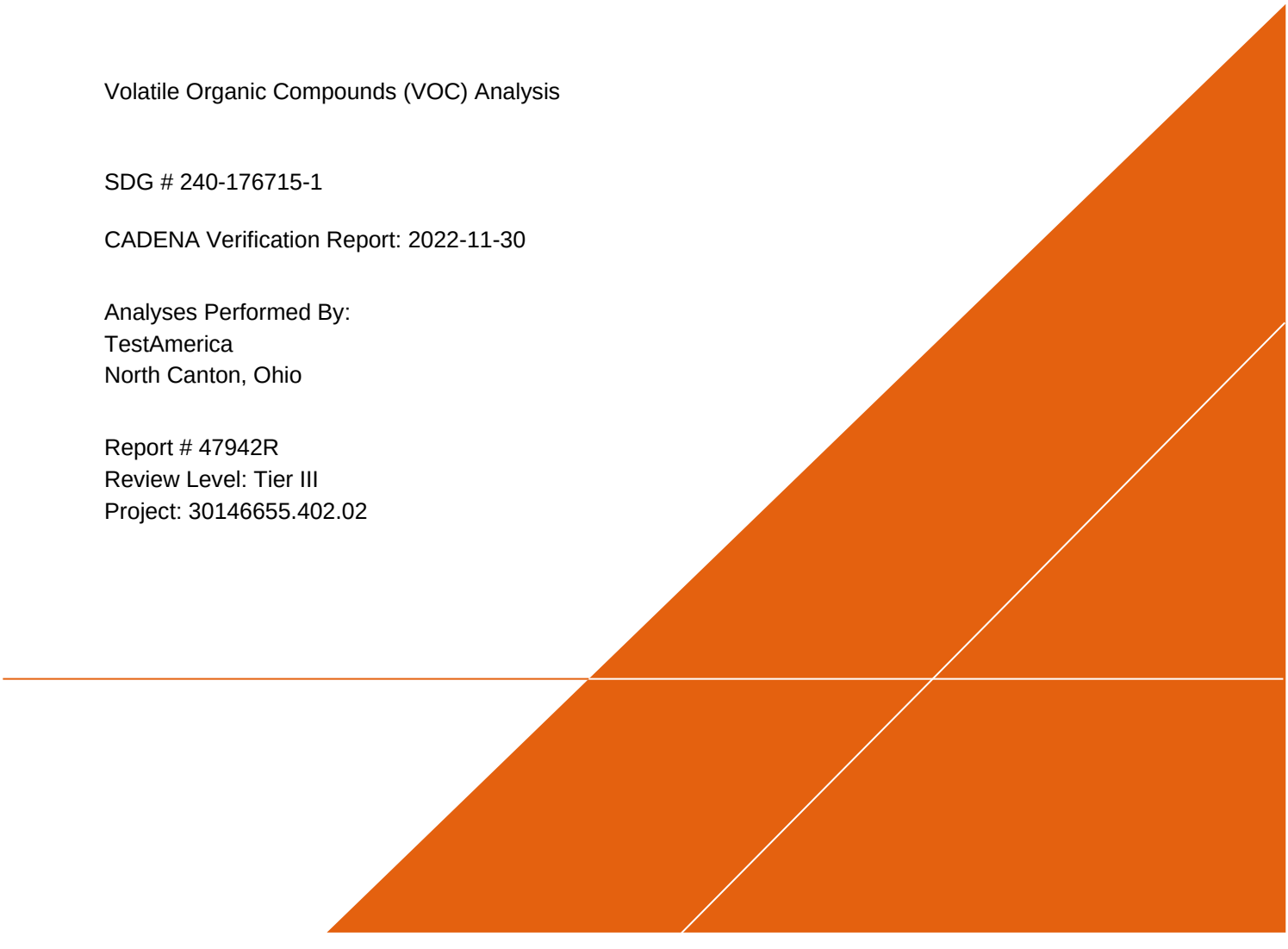
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176715-1

CADENA Verification Report: 2022-11-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47942R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176715-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_218	240-176715-1	Water	11/16/22		X	
MW-171S_111622	240-176715-2	Water	11/16/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: [ ] DW [ ] NPDES [ ] RCRA [ ] Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehcia Ferreira	TAT if different from below: 10 day (3 weeks, 2 weeks, 1 week, 2 days, 1 day)		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 218	11/16/22 (LF)	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1715_111622	11/16/22	11 22		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176715 Chain of Custody

Possible Hazard Identification: [✓] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): [ ] Return to Client [✓] Disposal By Lab [ ] Archive For [ ] Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12101 Brewster

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Lehcia Ferreira	Arcadis	11/16/22 14:10	Received by: Novi Cold Storage	Arcadis	11/16/22 14:10
Relinquished by:	Company: ARCADIS	Date/Time: 11/17/22 0935	Received by:	Company: EETA	Date/Time: 11/17/22 0935
Relinquished by:	Company: EETA	Date/Time: 11/17/22 941	Received in Laboratory by: M. [illegible]	Company: FEC	Date/Time: 11/18/22 8:00

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11/30/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Client Sample ID: TRIP BLANK_218
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176715-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 20:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/28/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 20:45*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 20:45*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/28/22 20:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176715-1

Client Sample ID: MW-171S_111622
Date Collected: 11/16/22 11:22
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176715-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/28/22 00:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 21:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 21:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 21:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 21:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/28/22 21:10*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 21:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/28/22 21:10*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/28/22 21:10*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 8:03:52 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176465-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Job ID: 240-176465-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176465-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176465-1	TRIP BLANK_44	Water	11/08/22 00:00	11/15/22 10:00
240-176465-2	MW-118S_110822	Water	11/08/22 14:26	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Client Sample ID: TRIP BLANK_44 — Lab Sample ID: 240-176465-1

No Detections.

Client Sample ID: MW-118S_110822 — Lab Sample ID: 240-176465-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Client Sample ID: TRIP BLANK_44

Date Collected: 11/08/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176465-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 17:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 17:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 17:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/22 17:42*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/17/22 17:42*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/17/22 17:42*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 17:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Client Sample ID: MW-118S_110822
Date Collected: 11/08/22 14:26
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176465-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/17/22 19:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 18:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/17/22 18:07*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/17/22 18:07*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/17/22 18:07*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 18:07*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176179-B-3 MS	Matrix Spike	90	98	95	95
240-176179-B-3 MSD	Matrix Spike Duplicate	88	99	97	96
240-176465-1	TRIP BLANK_44	93	101	99	97
240-176465-2	MW-118S_110822	92	100	99	97
LCS 240-552419/5	Lab Control Sample	92	102	98	98
MB 240-552419/8	Method Blank	91	99	97	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176465-2	MW-118S_110822	78
500-225128-C-10 MS	Matrix Spike	81
500-225128-C-10 MSD	Matrix Spike Duplicate	79
LCS 240-552321/3	Lab Control Sample	80
MB 240-552321/4	Method Blank	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552419/8
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 12:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 12:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 12:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 12:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/17/22 12:47*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/17/22 12:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/17/22 12:47*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/17/22 12:47*	*1*

Lab Sample ID: LCS 240-552419/5
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.9		ug/L		95	63 - 134
cis-1,2-Dichloroethene	20.0	19.7		ug/L		99	77 - 123
Tetrachloroethene	20.0	20.7		ug/L		103	76 - 123
trans-1,2-Dichloroethene	20.0	18.7		ug/L		94	75 - 124
Trichloroethene	20.0	19.7		ug/L		98	70 - 122
Vinyl chloride	20.0	18.0		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176179-B-3 MS
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	400	342		ug/L		85	56 - 135
cis-1,2-Dichloroethene	91		400	443		ug/L		88	66 - 128
Tetrachloroethene	10	J	400	353		ug/L		86	62 - 131
trans-1,2-Dichloroethene	20	U	400	336		ug/L		84	56 - 136
Trichloroethene	25		400	367		ug/L		86	61 - 124
Vinyl chloride	20	U	400	325		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176179-B-3 MS
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176179-B-3 MSD
Matrix: Water
Analysis Batch: 552419

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	357		ug/L		89	56 - 135	4	26
cis-1,2-Dichloroethene	91		400	463		ug/L		93	66 - 128	4	14
Tetrachloroethene	10	J	400	382		ug/L		93	62 - 131	8	20
trans-1,2-Dichloroethene	20	U	400	360		ug/L		90	56 - 136	7	15
Trichloroethene	25		400	386		ug/L		90	61 - 124	5	15
Vinyl chloride	20	U	400	348		ug/L		87	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552321/4
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/17/22 11:09*	*1*

Lab Sample ID: LCS 240-552321/3
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.63		ug/L		96	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MS
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	83		20.0	105	4	ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MSD
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	83		20.0	104	4	ug/L		108	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

GC/MS VOA

Analysis Batch: 552321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176465-2	MW-118S_110822	Total/NA	Water	8260D SIM	
MB 240-552321/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552321/3	Lab Control Sample	Total/NA	Water	8260D SIM	
500-225128-C-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-225128-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176465-1	TRIP BLANK_44	Total/NA	Water	8260D	
240-176465-2	MW-118S_110822	Total/NA	Water	8260D	
MB 240-552419/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552419/5	Lab Control Sample	Total/NA	Water	8260D	
240-176179-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-176179-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Client Sample ID: TRIP BLANK_44

Lab Sample ID: 240-176465-1

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552419	HMB	EET CAN	11/17/22 17:42

Client Sample ID: MW-118S_110822

Lab Sample ID: 240-176465-2

Date Collected: 11/08/22 14:26

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552419	HMB	EET CAN	11/17/22 18:07
Total/NA	Analysis	8260D SIM		1	552321	CS	EET CAN	11/17/22 19:16

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176465-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
e	TRIP BLANK_ 44	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
6	MW-1185_110822	11/08/22	1426		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176465 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12124 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis	11/10/22	1700	Received by: Novi cold storage	Arcadis 11/10/22 1700
Relinquished by:	ARCADIS	11/14/22	0950	Received by:	11/14/22 0950
Relinquished by:		11/14/22	0912	Received in Laboratory by:	11-15-22 10:00

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176465
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(N)
10. Were correct bottle(s) used for the test(s) indicated? CH 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cal Med	(Yes)	(No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176465

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/22/2022 8:03:52 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176465-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176465-1

		Sample Name:	TRIP BLANK_44				MW-118S_110822			
		Lab Sample ID:	2401764651				2401764652			
		Sample Date:	11/8/2022				11/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

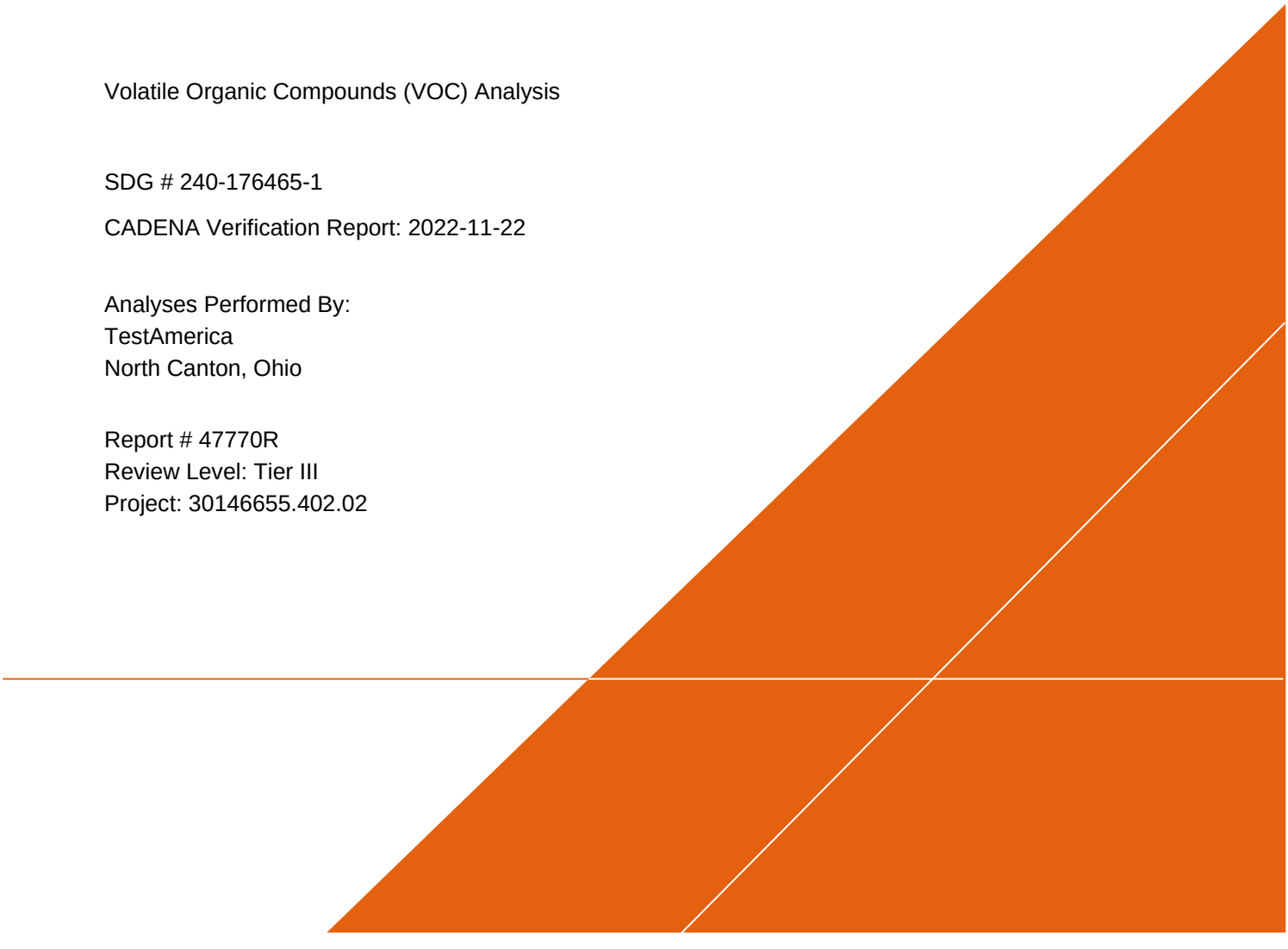
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176465-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47770R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176465-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_44	240-176465-1	Water	11/08/22		X	
MW-118S_110822	240-176465-2	Water	11/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 05, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 06, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
e TRIP BLANK_ 44	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
6 MW-1185_110822	11/08/22	1426		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176465 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12124 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/10/22 1700	Novi cold storage	Arcadis	11/10/22 1700
	ARCADIS	11/14/22 0950			11/14/22 0950
		11/14/22 0952	Laboratory by:		11-15-22 10:00

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Client Sample ID: TRIP BLANK_44
Lab Sample ID: 240-176465-1
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 17:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 17:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 17:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/17/22 17:42*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/17/22 17:42*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/17/22 17:42*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 17:42*	*1*

Client Sample ID: MW-118S_110822
Lab Sample ID: 240-176465-2
Date Collected: 11/08/22 14:26
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/17/22 19:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 18:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/17/22 18:07*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/17/22 18:07*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/17/22 18:07*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/17/22 18:07*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/23/2022 8:59:59 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176461-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176461-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176461-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176461-1	TRIP BLANK_16	Water	11/09/22 00:00	11/15/22 10:00
240-176461-2	MW-95S_110922	Water	11/09/22 11:01	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Client Sample ID: TRIP BLANK_16 — Lab Sample ID: 240-176461-1

No Detections.

Client Sample ID: MW-95S_110922 — Lab Sample ID: 240-176461-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.7		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Client Sample ID: TRIP BLANK_16
Date Collected: 11/09/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176461-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 12:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 12:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 12:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/18/22 12:57*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 12:57*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 12:57*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/18/22 12:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Client Sample ID: MW-95S_110922
Date Collected: 11/09/22 11:01
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176461-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/17/22 18:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:02	1
Vinyl chloride	**1.7**		1.0	0.45	ug/L			11/18/22 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/18/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/18/22 15:02*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 15:02*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/18/22 15:02*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176461-1	TRIP BLANK_16	95	75	92	88
240-176461-2	MW-95S_110922	98	76	92	92
240-176475-D-4 MSD	Matrix Spike Duplicate	86	96	97	84
240-176475-E-4 MS	Matrix Spike	86	95	98	87
LCS 240-552675/5	Lab Control Sample	86	93	97	86
MB 240-552675/8	Method Blank	96	74	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176461-2	MW-95S_110922	77
500-225128-C-10 MS	Matrix Spike	81
500-225128-C-10 MSD	Matrix Spike Duplicate	79
LCS 240-552321/3	Lab Control Sample	80
MB 240-552321/4	Method Blank	81

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552675/8
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 12:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 12:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 12:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/18/22 12:32*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 12:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 12:32*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/18/22 12:32*	*1*

Lab Sample ID: LCS 240-552675/5
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.9		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	24.3		ug/L		97	77 - 123
Tetrachloroethene	25.0	24.0		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	24.1		ug/L		97	75 - 124
Trichloroethene	25.0	21.9		ug/L		88	70 - 122
Vinyl chloride	12.5	12.9		ug/L		103	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	20.0		ug/L		80	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	3	15
Trichloroethene	1.0	U	25.0	18.0		ug/L		72	61 - 124	5	15
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176475-E-4 MS
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	18.9		ug/L		76	61 - 124
Vinyl chloride	1.0	U	25.0	23.3		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552321/4
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/17/22 11:09*	*1*

Lab Sample ID: LCS 240-552321/3
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.63		ug/L		96	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MS
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	83		20.0	105	4	ug/L		111	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 500-225128-C-10 MSD
Matrix: Water
Analysis Batch: 552321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	83		20.0	104	4	ug/L		108	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

GC/MS VOA

Analysis Batch: 552321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176461-2	MW-95S_110922	Total/NA	Water	8260D SIM	
MB 240-552321/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552321/3	Lab Control Sample	Total/NA	Water	8260D SIM	
500-225128-C-10 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-225128-C-10 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176461-1	TRIP BLANK_16	Total/NA	Water	8260D	
240-176461-2	MW-95S_110922	Total/NA	Water	8260D	
MB 240-552675/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552675/5	Lab Control Sample	Total/NA	Water	8260D	
240-176475-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176475-E-4 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Client Sample ID: TRIP BLANK_16

Lab Sample ID: 240-176461-1

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 12:57

Client Sample ID: MW-95S_110922

Lab Sample ID: 240-176461-2

Date Collected: 11/09/22 11:01

Matrix: Water

Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 15:02
Total/NA	Analysis	8260D SIM		1	552321	CS	EET CAN	11/17/22 18:25

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176461-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_16	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-955_110922	11/09/22	1101		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176461 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1213 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Gary Schafer	Arcadis	11/10/22 1700	Received by: NOVI cold storage	Arcadis	11/10/22 1700
Relinquished by:	Company: ARCADIS	Date/Time: 11/19/22 0950	Received by:	Company:	Date/Time: 11/14/22 0950
Relinquished by:	Company:	Date/Time: 11/14/22 0957	Received in Laboratory by:	Company: TSTA	Date/Time: 11-15-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176461
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Y)	(N)
10. Were correct bottle(s) used for the test(s) indicated? CH 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cal Med	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WT-NC-099

Login # : 176461

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 23, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176461-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-23
Initial Data Verification completed by CADENA: 2022-11-23
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176461-1

		Sample Name:	TRIP BLANK_16				MW-95S_110922			
		Lab Sample ID:	2401764611				2401764612			
		Sample Date:	11/9/2022				11/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.7	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

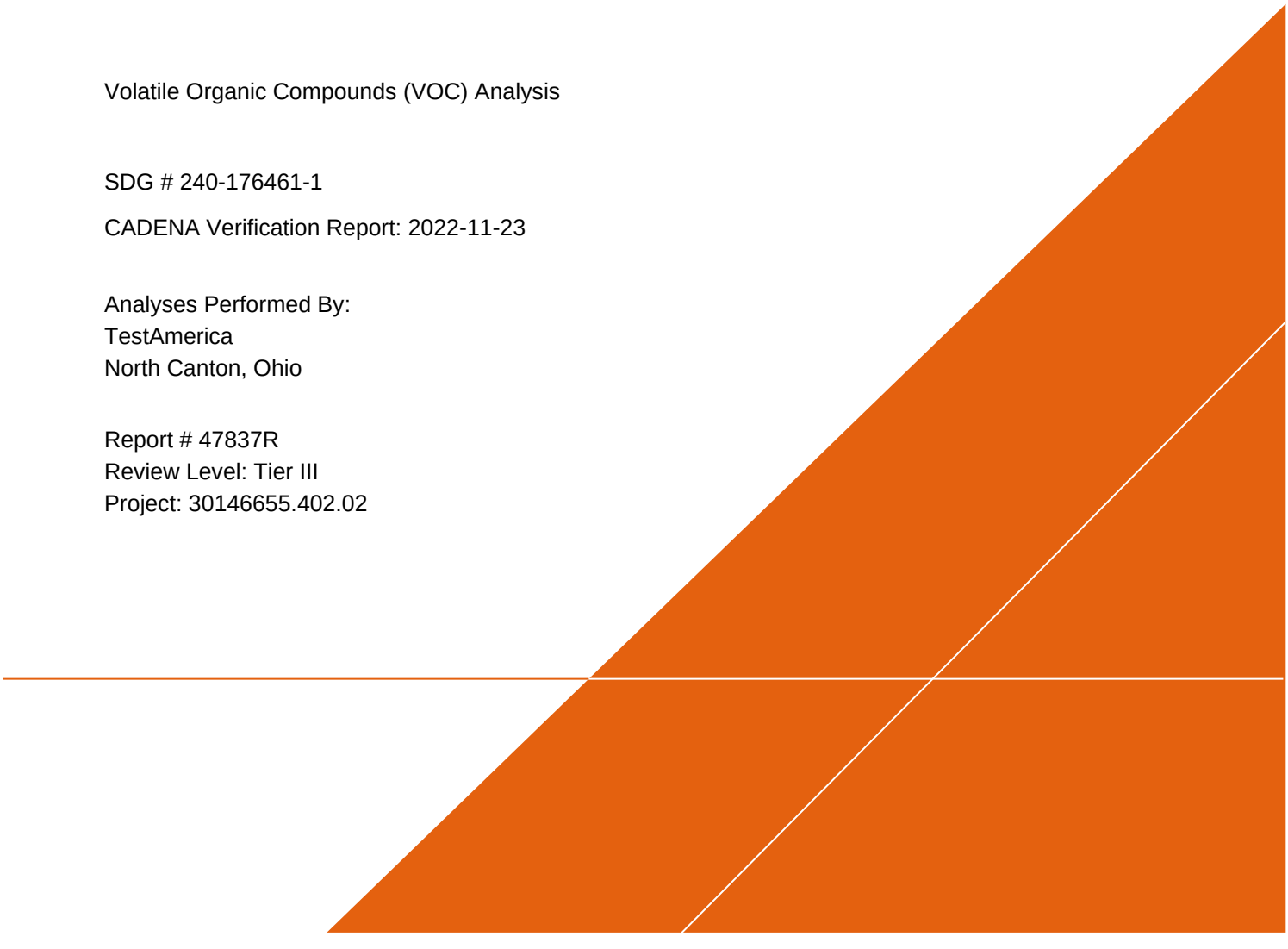
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176461-1

CADENA Verification Report: 2022-11-23

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47837R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176461-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_16	240-176461-1	Water	11/09/22		X	
MW-95S_110922	240-176461-2	Water	11/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 06, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_16	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-955_110922	11/09/22	1101		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176461 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 1213 Boston Post

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/10/22 1700	NOV. cold storage	Arcadis	11/10/22 1700
	ARCADIS	11/14/22 0950			11/14/22 0950
		11/14/22 0957		TSTA	11-15-22 10:00

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Client Sample ID: TRIP BLANK_16
Lab Sample ID: 240-176461-1
Date Collected: 11/09/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 12:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 12:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 12:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/18/22 12:57*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 12:57*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 12:57*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/18/22 12:57*	*1*

Client Sample ID: MW-95S_110922
Lab Sample ID: 240-176461-2
Date Collected: 11/09/22 11:01
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/17/22 18:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 15:02	1
Vinyl chloride	**1.7**		1.0	0.45	ug/L			11/18/22 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/18/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/18/22 15:02*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 15:02*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/18/22 15:02*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:03:34 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175769-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-175769-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175769-1

Receipt

The samples were received on 11/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8°C and 1.3°C

GC/MS VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175769-1	TRIP BLANK_34	Water	11/01/22 00:00	11/03/22 09:45
240-175769-2	MW-166S_110122	Water	11/01/22 12:28	11/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Client Sample ID: TRIP BLANK_34 — Lab Sample ID: 240-175769-1

No Detections.

Client Sample ID: MW-166S_110122 — Lab Sample ID: 240-175769-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Client Sample ID: TRIP BLANK_34
Date Collected: 11/01/22 00:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175769-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 12:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/11/22 12:18*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/11/22 12:18*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 12:18*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/11/22 12:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Client Sample ID: MW-166S_110122
Date Collected: 11/01/22 12:28
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175769-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/22 21:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*		*11/11/22 21:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 12:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/11/22 12:41*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/11/22 12:41*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/22 12:41*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/22 12:41*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175769-1	TRIP BLANK_34	90	83	92	91
240-175769-2	MW-166S_110122	92	81	91	92
240-175790-H-5 MS	Matrix Spike	89	87	94	90
240-175790-K-5 MSD	Matrix Spike Duplicate	95	92	98	94
LCS 240-551499/5	Lab Control Sample	90	88	93	95
MB 240-551499/8	Method Blank	94	81	91	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175769-2	MW-166S_110122	112
240-175783-J-3 MS	Matrix Spike	106
240-175783-N-3 MSD	Matrix Spike Duplicate	106
LCS 240-551642/3	Lab Control Sample	119
MB 240-551642/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551499/8
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 11:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 11:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 11:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/11/22 11:09*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/11/22 11:09*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/22 11:09*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 11:09*	*1*

Lab Sample ID: LCS 240-551499/5
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.9		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	77 - 123
Tetrachloroethene	20.0	21.9		ug/L		110	76 - 123
trans-1,2-Dichloroethene	20.0	17.9		ug/L		89	75 - 124
Trichloroethene	20.0	20.0		ug/L		100	70 - 122
Vinyl chloride	20.0	16.9		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-175790-H-5 MS
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.8		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.6		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	20.0	20.2		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.5		ug/L		82	56 - 136
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124
Vinyl chloride	1.0	U	20.0	15.9		ug/L		79	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175790-H-5 MS
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: 240-175790-K-5 MSD
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	66 - 128	9	14
Tetrachloroethene	1.0	U	20.0	21.8		ug/L		109	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 136	10	15
Trichloroethene	1.0	U	20.0	19.9		ug/L		100	61 - 124	10	15
Vinyl chloride	1.0	U	20.0	18.2		ug/L		91	43 - 157	14	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	94		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551642/4
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/22 17:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/11/22 17:29	1

Lab Sample ID: LCS 240-551642/3
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.82		ug/L		98	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	119		66 - 120

Lab Sample ID: 240-175783-J-3 MS
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.98		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-175783-N-3 MSD
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.47		ug/L		95	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

GC/MS VOA

Analysis Batch: 551499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175769-1	TRIP BLANK_34	Total/NA	Water	8260D	
240-175769-2	MW-166S_110122	Total/NA	Water	8260D	
MB 240-551499/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551499/5	Lab Control Sample	Total/NA	Water	8260D	
240-175790-H-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-175790-K-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 551642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175769-2	MW-166S_110122	Total/NA	Water	8260D SIM	
MB 240-551642/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551642/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175783-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175783-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Client Sample ID: TRIP BLANK_34

Lab Sample ID: 240-175769-1

Date Collected: 11/01/22 00:00

Matrix: Water

Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 12:18

Client Sample ID: MW-166S_110122

Lab Sample ID: 240-175769-2

Date Collected: 11/01/22 12:28

Matrix: Water

Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 12:41
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/11/22 21:14

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175769-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Ulrica Terrero	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 34	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1665_110122	11/01/22	1228		6						b					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-175769 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ✓ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12147 Stark Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ulrica Terrero	Arcadis	18:00	Novi Cold Storage	Arcadis	18:00
Jennifer Shug	Arcadis	11/2/22 1440			
	FedEx	11/2/22 1530	Jessica Lin	EETNC	11-3-22 0945

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11/16/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 175469
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-3-22 Opened on 11-3-22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Y)
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. (Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) 1x40mL for TB-34 were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 175769

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.1	0.8	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2022 3:03:34 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 16, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175769-1
Sample date: 2022-11-01
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-16
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175769-1

		Sample Name:	TRIP BLANK_34				MW-166S_110122			
		Lab Sample ID:	2401757691				2401757692			
		Sample Date:	11/1/2022				11/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

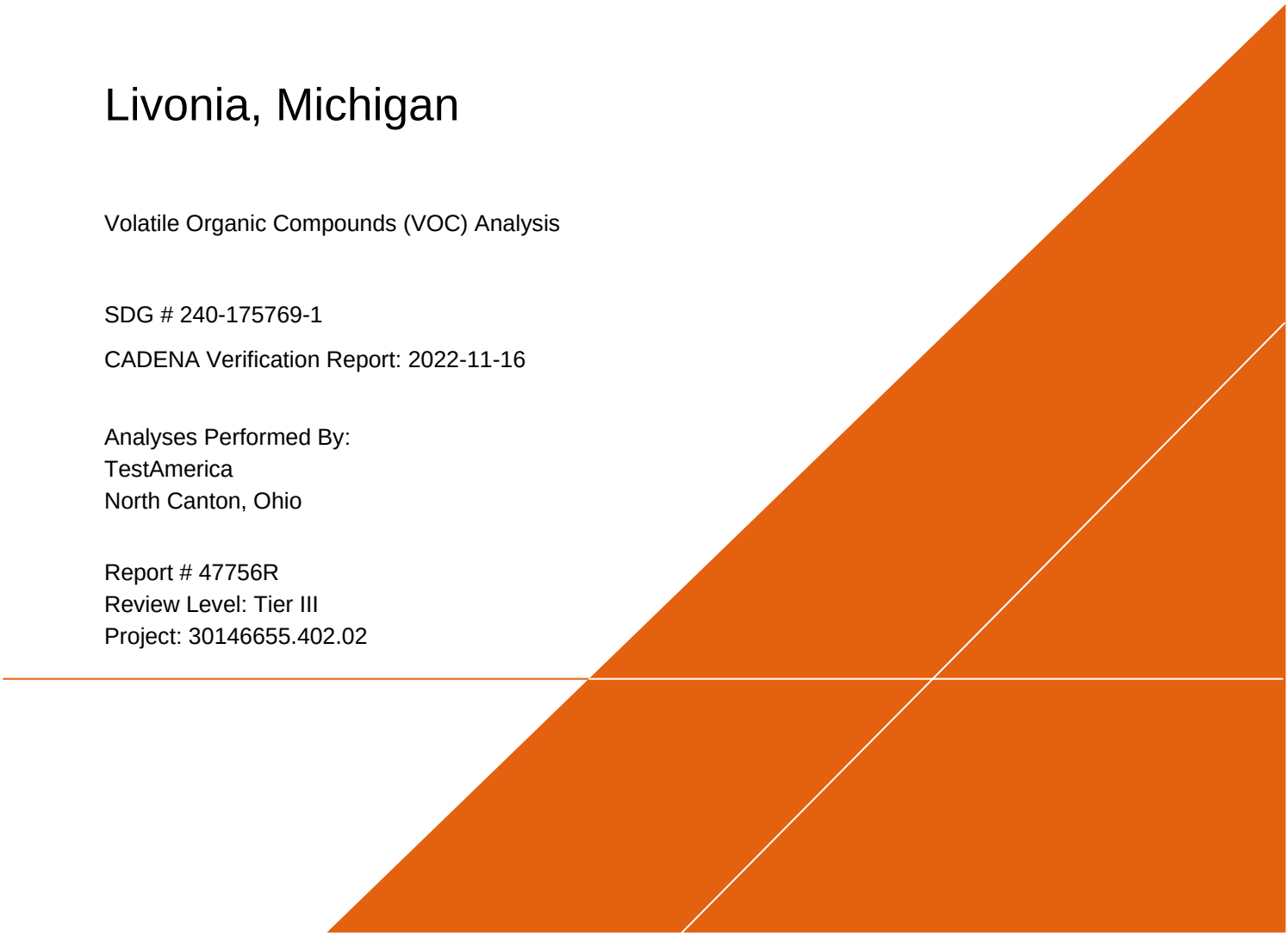
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175769-1

CADENA Verification Report: 2022-11-16

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47756R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175769-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_34	240-175769-1	Water	11/01/22		X	
MW-166S_110122	240-175769-2	Water	11/01/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Ursula Ferreira	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_ 34	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-1665_110122	11/01/22	1228		6						b					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-175769 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12147 Stark Rd
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ursula Ferreira	Arcadis	18:00	Novi Gold Range	Arcadis	18:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jommer Shug	Arcadis	11/2/22 1440			11/2/22 1500
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/2/22 1530		EETNC	11-3-22 0945

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Client Sample ID: TRIP BLANK_34
Lab Sample ID: 240-175769-1

Date Collected: 11/01/22 00:00
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 12:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/11/22 12:18*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/11/22 12:18*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 12:18*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/11/22 12:18*	*1*

Client Sample ID: MW-166S_110122
Lab Sample ID: 240-175769-2

Date Collected: 11/01/22 12:28
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/22 21:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*		*11/11/22 21:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 12:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/11/22 12:41*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/11/22 12:41*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/22 12:41*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/22 12:41*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 1/18/2023 2:05:34 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175891-2

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Job ID: 240-175891-2

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175891-2

Comments
No additional comments.

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9º C, 1.2º C and 1.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175891-6	MW-214S_110122	Water	11/01/22 14:35	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Client Sample ID: MW-214S_110122 **Lab Sample ID: 240-175891-6**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Client Sample ID: MW-214S_110122
Date Collected: 11/01/22 14:35
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 09:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/13/22 09:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 13:34*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/22 13:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/10/22 13:34*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/22 13:34*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175891-6	MW-214S_110122	88	100	97	94
240-175891-D-8 MS	Matrix Spike	93	104	101	96
240-175891-H-8 MSD	Matrix Spike Duplicate	92	102	98	97
LCS 240-551304/5	Lab Control Sample	88	102	97	93
MB 240-551304/8	Method Blank	88	101	95	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175891-6	MW-214S_110122	104
240-175891-G-8 MS	Matrix Spike	106
240-175891-O-8 MSD	Matrix Spike Duplicate	112
LCS 240-551689/3	Lab Control Sample	119
MB 240-551689/4	Method Blank	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551304/8
Matrix: Water
Analysis Batch: 551304

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 11:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 11:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 11:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 11:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 11:08*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 11:08*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/10/22 11:08*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/22 11:08*	*1*

Lab Sample ID: LCS 240-551304/5
Matrix: Water
Analysis Batch: 551304

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	77 - 123
Tetrachloroethene	20.0	18.4		ug/L		92	76 - 123
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
Trichloroethene	20.0	17.7		ug/L		89	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-175891-D-8 MS
Matrix: Water
Analysis Batch: 551304

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.9		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	66 - 128
Tetrachloroethene	1.0	U	20.0	19.7		ug/L		99	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.7		ug/L		89	56 - 136
Trichloroethene	1.0	U	20.0	18.2		ug/L		91	61 - 124
Vinyl chloride	3.5		20.0	22.3		ug/L		94	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175891-D-8 MS
Matrix: Water
Analysis Batch: 551304

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175891-H-8 MSD
Matrix: Water
Analysis Batch: 551304

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	20.0	20.1		ug/L		100	66 - 128	9	14
Tetrachloroethene	1.0	U	20.0	20.9		ug/L		105	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.5		ug/L		98	56 - 136	9	15
Trichloroethene	1.0	U	20.0	20.2		ug/L		101	61 - 124	10	15
Vinyl chloride	3.5		20.0	23.7		ug/L		101	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551689/4
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 05:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/13/22 05:54*	*1*

Lab Sample ID: LCS 240-551689/3
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.78		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-175891-G-8 MS
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.1		10.0	11.7		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-175891-O-8 MSD
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	11.5		ug/L		94	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

GC/MS VOA

Analysis Batch: 551304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175891-6	MW-214S_110122	Total/NA	Water	8260D	
MB 240-551304/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551304/5	Lab Control Sample	Total/NA	Water	8260D	
240-175891-D-8 MS	Matrix Spike	Total/NA	Water	8260D	
240-175891-H-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 551689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175891-6	MW-214S_110122	Total/NA	Water	8260D SIM	
MB 240-551689/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551689/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175891-G-8 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175891-O-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Client Sample ID: MW-214S_110122

Date Collected: 11/01/22 14:35
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 13:34
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 09:57

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-2

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	12-28-22
Iowa	State	421	01-08-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-21-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Sample Specific Notes / Special Instructions:
		---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-214S_110122	11/1/22	1435		6						6					N	G	X	X	X	X	X	X						3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 12400 Belden Ct
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	**Received in Laboratory by:**	**Company:**	**Date/Time:**

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DATA VERIFICATION REPORT

January 18, 2023

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175891-2
Sample date: 2022-11-01
Report received by CADENA: 2023-01-18
Initial Data Verification completed by CADENA: 2023-01-18
Number of Samples:1
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175891-2

Sample Name: MW-214S_110122
Lab Sample ID: 2401758916
Sample Date: 11/1/2022

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260D					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---
OSW-8260DSIM					
1,4-Dioxane	123-91-1	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

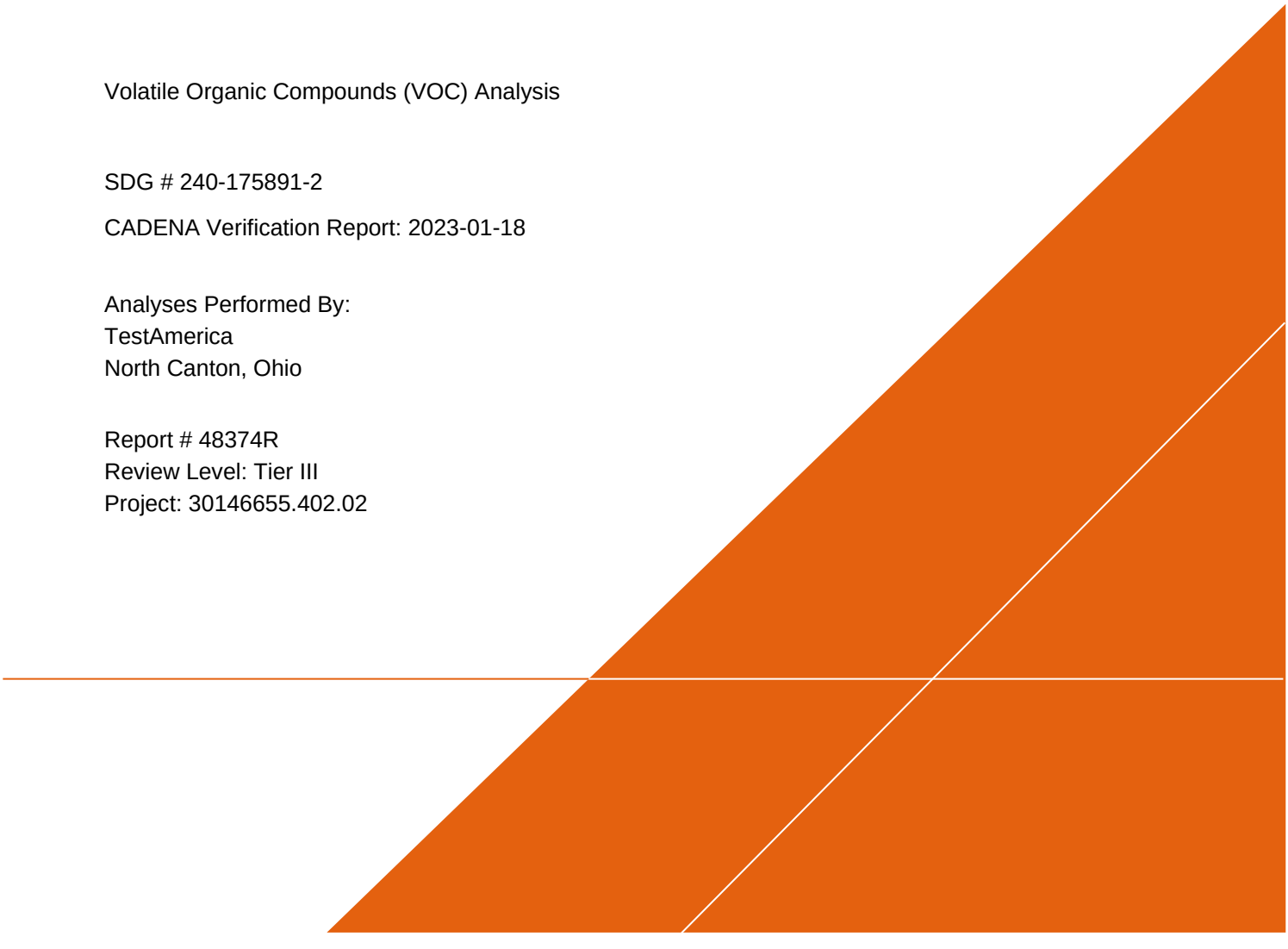
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175891-2

CADENA Verification Report: 2023-01-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 48374R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175891-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
MW-214S_110122	240-175891-6	Water	11/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: January 23, 2023

PEER REVIEW: Andrew Korycinski

DATE: January 24, 2023

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: SAM SUKARIA	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_01		---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-214S_110122	11/1/22	1435		6						6					N	G	X	X	X	X	X	X						3 VOAs for 8260B 3 VOAs for 8260B SIM

Revised COC by C.Weaver on 1/18/23. Removed MW-214S from lab report 240-175891-1 which was a right of way well report. MW-214S is a private property report on 12400 Belden Ct.

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 12400 Belden Ct

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	**Received in Laboratory by:**	**Company:**	**Date/Time:**

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Client Sample ID: MW-214S_110122
Lab Sample ID: 240-175891-6

Date Collected: 11/01/22 14:35
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 09:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/13/22 09:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 13:34*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/22 13:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/10/22 13:34*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/22 13:34*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:15:29 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176624-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Job ID: 240-176624-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176624-1

Comments
No additional comments.

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 1.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176624-1	TRIP BLANK_199	Water	11/15/22 00:00	11/17/22 08:00
240-176624-2	MW-146S_111522	Water	11/15/22 12:25	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Client Sample ID: TRIP BLANK_199 — Lab Sample ID: 240-176624-1

No Detections.

Client Sample ID: MW-146S_111522 — Lab Sample ID: 240-176624-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Client Sample ID: TRIP BLANK_199
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176624-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 15:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 15:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 15:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/25/22 15:09*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 15:09*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 15:09*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 15:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Client Sample ID: MW-146S_111522
Date Collected: 11/15/22 12:25
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176624-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/27/22 22:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 19:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 19:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 19:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/25/22 19:20*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 19:20*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/25/22 19:20*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/25/22 19:20*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176621-A-2 MS	Matrix Spike	84	95	95	84
240-176621-D-2 MSD	Matrix Spike Duplicate	85	94	96	85
240-176624-1	TRIP BLANK_199	98	75	91	95
240-176624-2	MW-146S_111522	101	78	94	96
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176624-2	MW-146S_111522	78
240-176634-I-5 MS	Matrix Spike	80
240-176634-O-5 MSD	Matrix Spike Duplicate	80
LCS 240-553480/3	Lab Control Sample	76
MB 240-553480/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-D-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553480/4
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553480/3
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176634-I-5 MS
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176634-O-5 MSD
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

GC/MS VOA

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176624-1	TRIP BLANK_199	Total/NA	Water	8260D	
240-176624-2	MW-146S_111522	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176621-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 553480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176624-2	MW-146S_111522	Total/NA	Water	8260D SIM	
MB 240-553480/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553480/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176634-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176634-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Client Sample ID: TRIP BLANK_199

Lab Sample ID: 240-176624-1

Date Collected: 11/15/22 00:00

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 15:09

Client Sample ID: MW-146S_111522

Lab Sample ID: 240-176624-2

Date Collected: 11/15/22 12:25

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 19:20
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/27/22 22:40

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaicinler	TAT if different from below 10 day ✓ 2 weeks 3 weeks 1 week 2 days 1 day		Walk-in client Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_199	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1405_111522	11/15/22	12:25		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176624 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ✓ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34367 Capitol ST
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/15/22 16:10	ADW Cold Storage	Arcadis	11/15/22 16:10
	ARCADIS	11/16/22 1035		EETA	11/16/22 1035
	EETA	11/16/22 1040	Received in Laboratory by:	EETNC	11-17-22 800

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176624
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-17-22 Opened on 11-17-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes (No)	**Tests that are not checked for pH by Receiving:**
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No (NA)	**VOAs**
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	**Oil and Grease**
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)	**TOC**
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y N), # of containers (Y N), and sample type of grab/comp (Y N)?	(Y) N	6ml 11-17-22
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042016	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176624

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176624-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176624-1

		Sample Name:	TRIP BLANK_199				MW-146S_111522			
		Lab Sample ID:	2401766241				2401766242			
		Sample Date:	11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

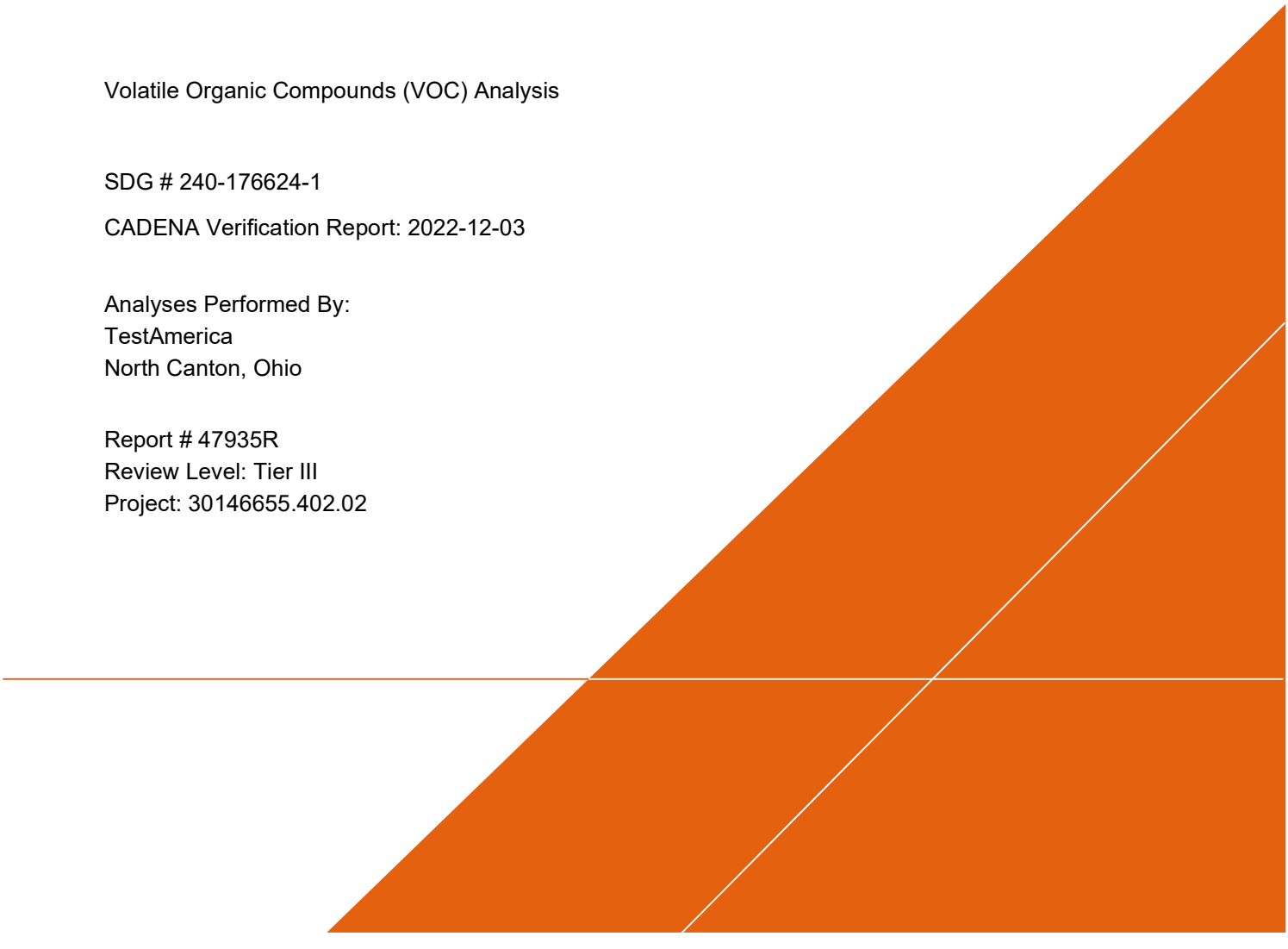
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176624-1

CADENA Verification Report: 2022-12-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47935R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176624-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_199	240-176624-1	Water	11/15/2022		X	
MW-146S_111522	240-176624-2	Water	11/15/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 14, 2022

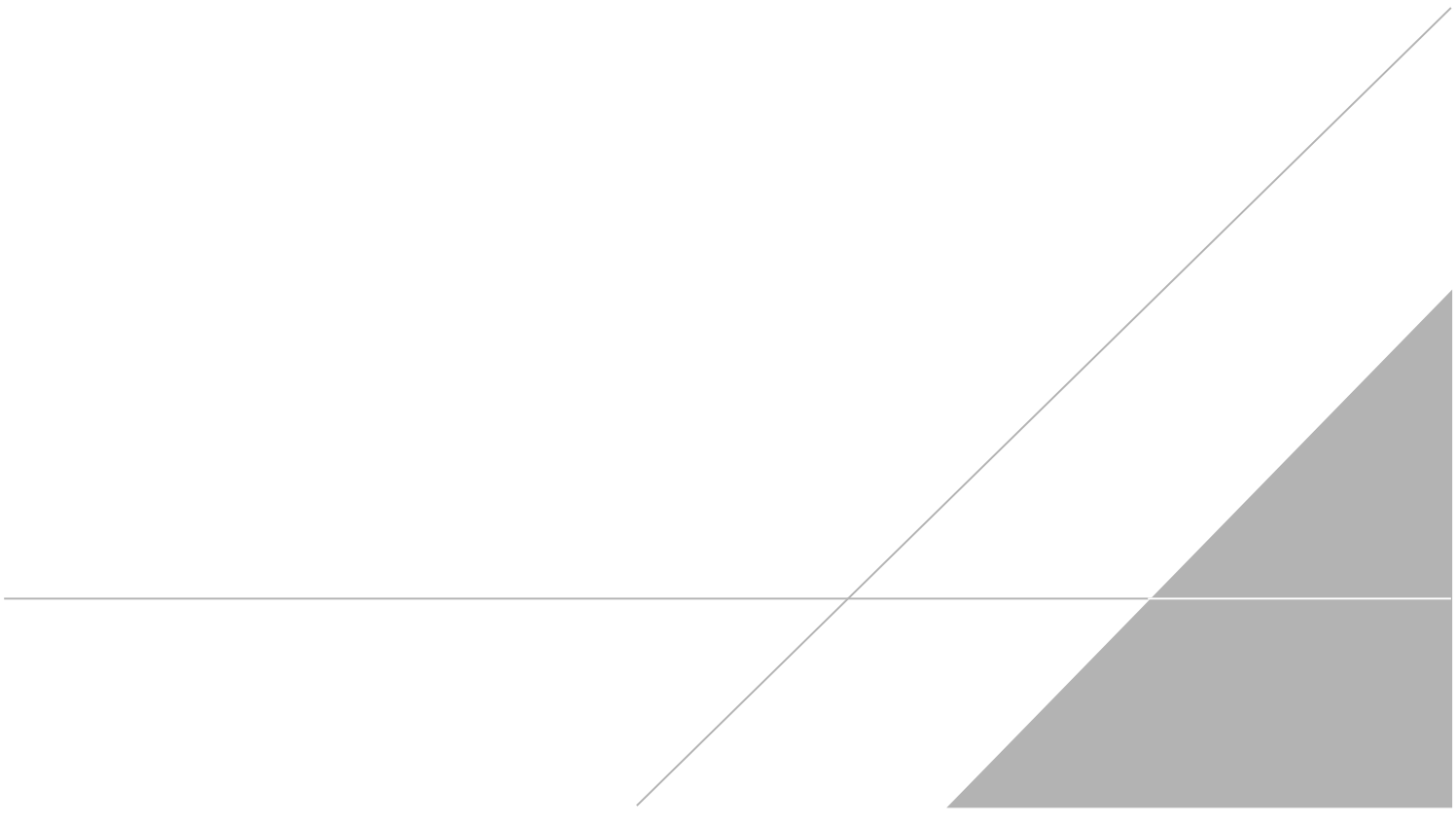
PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaicinler	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zinc Acetate/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_199	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1405_111522	11/15/22	12:25		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176624 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34367 Capitol ST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/15/22 16:10	NOVI Cold Storage	Arcadis	11/15/22 16:10
	ARCADIS	11/16/22 1035		EETA	11/16/22 1035
	EETA	11/16/22 1040	Received in Laboratory by:	EETNC	11-17-22 800

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12/2/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Client Sample ID: TRIP BLANK_199
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176624-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 15:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 15:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 15:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/25/22 15:09*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 15:09*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 15:09*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 15:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176624-1

Client Sample ID: MW-146S_111522
Date Collected: 11/15/22 12:25
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176624-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/27/22 22:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 19:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 19:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 19:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/25/22 19:20*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 19:20*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/25/22 19:20*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/25/22 19:20*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:20:53 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176247-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Job ID: 240-176247-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176247-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176247-1	TRIP BLANK_29	Water	11/09/22 00:00	11/11/22 08:00
240-176247-2	MW-150S_110922	Water	11/09/22 12:16	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Client Sample ID: TRIP BLANK_29 — Lab Sample ID: 240-176247-1

No Detections.

Client Sample ID: MW-150S_110922 — Lab Sample ID: 240-176247-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.68	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Client Sample ID: TRIP BLANK_29

Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176247-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/22 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/22 12:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/22 12:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/22 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/21/22 12:33*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/21/22 12:33*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/21/22 12:33*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/21/22 12:33*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Client Sample ID: MW-150S_110922
Date Collected: 11/09/22 12:16
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176247-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 04:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 04:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/22 13:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/22 13:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 13:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/22 13:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 13:21	1
Vinyl chloride	**0.68**	**J**	1.0	0.45	ug/L			11/21/22 13:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/21/22 13:21*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/21/22 13:21*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/21/22 13:21*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/21/22 13:21*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176247-1	TRIP BLANK_29	99	90	101	107
240-176247-2	MW-150S_110922	98	90	100	108
LCS 240-552949/5	Lab Control Sample	93	93	107	98
MB 240-552949/8	Method Blank	102	95	102	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176247-2	MW-150S_110922	80
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552949/8
Matrix: Water
Analysis Batch: 552949

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/22 12:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/22 12:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/22 12:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/22 12:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/21/22 12:09*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/21/22 12:09*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/21/22 12:09*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*11/21/22 12:09*	*1*

Lab Sample ID: LCS 240-552949/5
Matrix: Water
Analysis Batch: 552949

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.8		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	26.3		ug/L		105	77 - 123
Tetrachloroethene	25.0	28.3		ug/L		113	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	26.1		ug/L		104	70 - 122
Vinyl chloride	25.0	25.5		ug/L		102	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.84		ug/L		88	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

GC/MS VOA

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176247-2	MW-150S_110922	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176247-1	TRIP BLANK_29	Total/NA	Water	8260D	
240-176247-2	MW-150S_110922	Total/NA	Water	8260D	
MB 240-552949/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552949/5	Lab Control Sample	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Client Sample ID: TRIP BLANK_29

Lab Sample ID: 240-176247-1

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552949	SAM	EET CAN	11/21/22 12:33

Client Sample ID: MW-150S_110922

Lab Sample ID: 240-176247-2

Date Collected: 11/09/22 12:16

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552949	SAM	EET CAN	11/21/22 13:21
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 04:21

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176247-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehicia Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_29	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1SOS_110922	11/09/22	12:16		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176247 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Beacon ; back yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehicia Ferreira	Arcadis	11/09/22 15:15	Novi cold Storage	Arcadis	11/09/22 1515
Relinquished by:	Company: ARCADIS	Date/Time: 11/10/22 1515	Received by:	Company: EETA	Date/Time: 11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: EETDC	Date/Time: 11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176247
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-11-22 Opened on 11-11-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? — Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? — Yes No
11. Sufficient quantity received to perform indicated analyses? — Yes No
12. Are these work share samples and all listed on the COC? — Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? — Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. — Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # None — Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176247

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176247-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176247-1

		Sample Name:	TRIP BLANK_29				MW-150S_110922			
		Lab Sample ID:	2401762471				2401762472			
		Sample Date:	11/9/2022				11/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.68	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

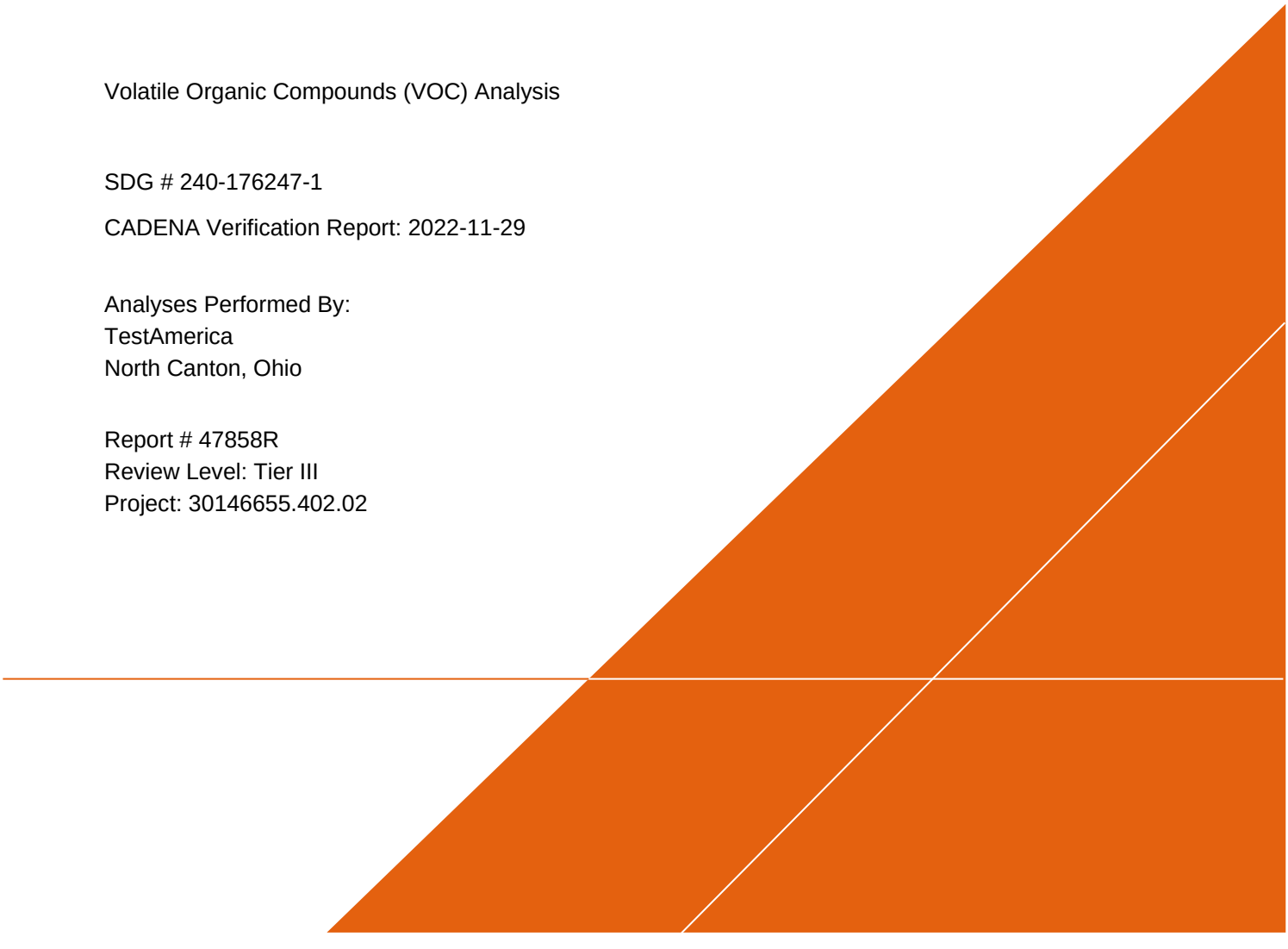
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176247-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47858R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176247-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_29	240-176247-1	Water	11/09/22		X	
MW-150S_110922	240-176247-2	Water	11/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehicia Ferreira	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_29	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-15OS_110922	11/09/22	12:16		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176247 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34380 Beacon i backyard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehicia Ferreira	Arcadis	11/09/21 15:15	Novi cold Storage	Arcadis	11/9/22 1515
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		EETA	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETDC	11-11-22 800

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Client Sample ID: TRIP BLANK_29
Lab Sample ID: 240-176247-1
Date Collected: 11/09/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/22 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/22 12:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/22 12:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/22 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/21/22 12:33*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/21/22 12:33*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/21/22 12:33*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/21/22 12:33*	*1*

Client Sample ID: MW-150S_110922
Lab Sample ID: 240-176247-2
Date Collected: 11/09/22 12:16
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 04:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 04:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/22 13:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/22 13:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 13:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/22 13:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 13:21	1
Vinyl chloride	**0.68**	**J**	1.0	0.45	ug/L			11/21/22 13:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/21/22 13:21*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/21/22 13:21*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/21/22 13:21*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/21/22 13:21*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176895-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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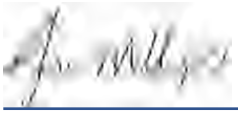

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Job ID: 240-176895-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176895-1

Comments
No additional comments.

Receipt
The samples were received on 11/22/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176895-1	TRIP BLANK_207	Water	11/18/22 00:00	11/22/22 09:40
240-176895-2	MW-90S_111822	Water	11/18/22 12:40	11/22/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Client Sample ID: TRIP BLANK_207 — Lab Sample ID: 240-176895-1

No Detections.

Client Sample ID: MW-90S_111822 — Lab Sample ID: 240-176895-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Client Sample ID: TRIP BLANK_207
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176895-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 01:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 01:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 01:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 01:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 01:49*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*12/01/22 01:49*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 01:49*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*12/01/22 01:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Client Sample ID: MW-90S_111822

Date Collected: 11/18/22 12:40
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176895-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 10:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/22 10:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 08:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 08:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 08:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 08:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 08:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 08:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*12/01/22 08:11*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*12/01/22 08:11*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 08:11*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*12/01/22 08:11*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176895-1	TRIP BLANK_207	89	99	103	98
240-176895-2	MW-90S_111822	92	98	103	97
240-176901-H-2 MS	Matrix Spike	83	97	105	96
240-176901-N-2 MSD	Matrix Spike Duplicate	83	97	105	96
LCS 240-554038/4	Lab Control Sample	85	100	105	99
MB 240-554038/5	Method Blank	93	102	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176895-2	MW-90S_111822	106
240-176901-I-2 MS	Matrix Spike	99
240-176901-O-2 MSD	Matrix Spike Duplicate	104
LCS 240-553633/3	Lab Control Sample	109
MB 240-553633/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-554038/5
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/22 23:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/22 23:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/22 23:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/22 23:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/30/22 23:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/30/22 23:42*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/30/22 23:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/30/22 23:42*	*1*

Lab Sample ID: LCS 240-554038/4
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	23.4		ug/L		94	77 - 123
Tetrachloroethene	25.0	25.2		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.2		ug/L		93	70 - 122
Vinyl chloride	25.0	21.6		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.9		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	23.8		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	0.75	J	25.0	20.3		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176901-N-2 MSD
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	28.9		ug/L		116	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	24.6		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	56 - 136	1	15
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124	4	15
Vinyl chloride	0.75	J	25.0	20.5		ug/L		79	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.98		ug/L		100	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-I-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

GC/MS VOA

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176895-2	MW-90S_111822	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176901-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 554038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176895-1	TRIP BLANK_207	Total/NA	Water	8260D	
240-176895-2	MW-90S_111822	Total/NA	Water	8260D	
MB 240-554038/5	Method Blank	Total/NA	Water	8260D	
LCS 240-554038/4	Lab Control Sample	Total/NA	Water	8260D	
240-176901-H-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176901-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Client Sample ID: TRIP BLANK_207

Lab Sample ID: 240-176895-1

Date Collected: 11/18/22 00:00

Matrix: Water

Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 01:49

Client Sample ID: MW-90S_111822

Lab Sample ID: 240-176895-2

Date Collected: 11/18/22 12:40

Matrix: Water

Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 08:11
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 10:27

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sykaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac) NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
a TRIP BLANK_ 207	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
b MW-90s 11/822	11/18/22	1240		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176895 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34380 Capitol Back-yd.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaria	Arcadis	11/18/22 1500	Arcadis Cold Storage	Arcadis	11/18/22 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/22 0840		FEMA	11/21/22 0840
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	FEMA	11/21/22		FETPC	11-22-22 940

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176895
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-22-22 Opened on 11-22-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 3.2 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● = Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62020	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WT-NC-099

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176895-1
Sample date: 2022-11-18
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176895-1

		Sample Name:	TRIP BLANK_207				MW-90S_111822			
		Lab Sample ID:	2401768951				2401768952			
		Sample Date:	11/18/2022				11/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176895-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47921R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176895-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_207	240-176895-1	Water	11/18/2022		X	
MW-90S_111822	240-176895-2	Water	11/18/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_207 MW-90S_111822	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 12, 2022

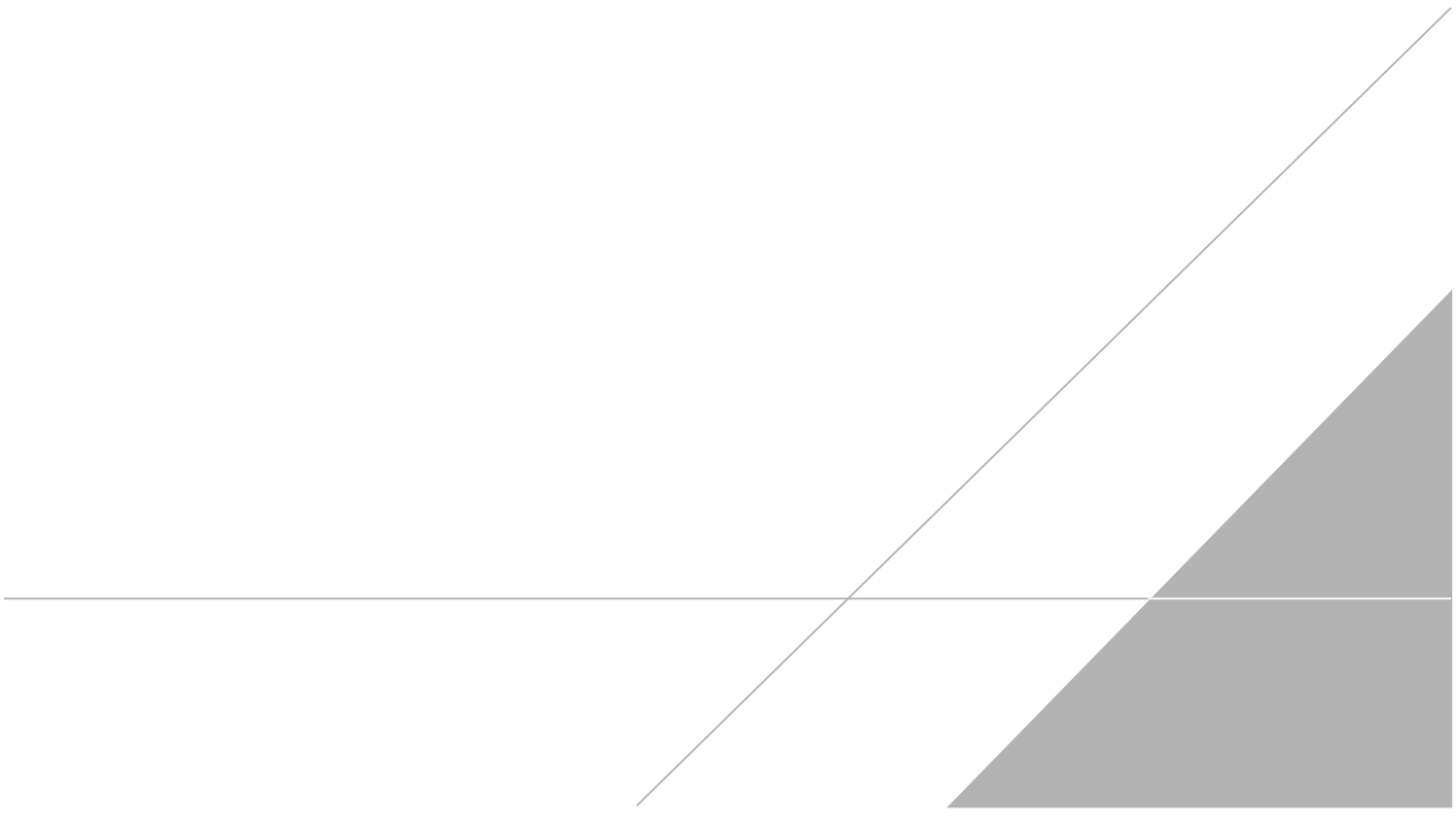
PEER REVIEW: Andrew Korycinski

DATE: December 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN
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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sykaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
a TRIP BLANK_ 207	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
b MW-90s 11/822	11/18/22	1240		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176895 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34380 Capitol Backyd.
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sykaria	Arcadis	11/18/22 1500	Arcadis Cold Storage	Arcadis	11/18/22 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/22 0840		FEMA	11/21/22 0840
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	FEMA	11/21/22		FETPC	11-22-22 940

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12/6/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Client Sample ID: TRIP BLANK_207
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176895-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 01:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 01:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 01:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 01:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 01:49*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*12/01/22 01:49*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 01:49*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*12/01/22 01:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176895-1

Client Sample ID: MW-90S_111822

Date Collected: 11/18/22 12:40
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176895-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 10:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/22 10:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 08:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 08:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 08:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 08:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 08:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 08:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*12/01/22 08:11*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*12/01/22 08:11*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 08:11*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*12/01/22 08:11*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176894-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Eurofins Canton

Job Notes

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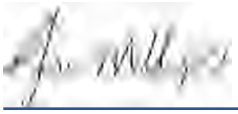

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Job ID: 240-176894-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176894-1

Comments
No additional comments.

Receipt
The samples were received on 11/22/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176894-1	TRIP BLANK_197	Water	11/18/22 00:00	11/22/22 09:40
240-176894-2	MW-147S_111822	Water	11/18/22 11:40	11/22/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Client Sample ID: TRIP BLANK_197 — Lab Sample ID: 240-176894-1

No Detections.

Client Sample ID: MW-147S_111822 — Lab Sample ID: 240-176894-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Client Sample ID: TRIP BLANK_197
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176894-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 01:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 01:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 01:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*12/01/22 01:24*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*12/01/22 01:24*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*12/01/22 01:24*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*12/01/22 01:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Client Sample ID: MW-147S_111822
Date Collected: 11/18/22 11:40
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176894-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 10:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/29/22 10:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 07:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 07:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 07:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 07:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 07:45	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			12/01/22 07:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*12/01/22 07:45*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 07:45*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 07:45*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 07:45*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176894-1	TRIP BLANK_197	94	101	104	101
240-176894-2	MW-147S_111822	91	97	103	95
240-176901-H-2 MS	Matrix Spike	83	97	105	96
240-176901-N-2 MSD	Matrix Spike Duplicate	83	97	105	96
LCS 240-554038/4	Lab Control Sample	85	100	105	99
MB 240-554038/5	Method Blank	93	102	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176894-2	MW-147S_111822	99
240-176901-I-2 MS	Matrix Spike	99
240-176901-O-2 MSD	Matrix Spike Duplicate	104
LCS 240-553633/3	Lab Control Sample	109
MB 240-553633/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-554038/5
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/22 23:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/22 23:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/22 23:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/22 23:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/30/22 23:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/30/22 23:42*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/30/22 23:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/30/22 23:42*	*1*

Lab Sample ID: LCS 240-554038/4
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	23.4		ug/L		94	77 - 123
Tetrachloroethene	25.0	25.2		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.2		ug/L		93	70 - 122
Vinyl chloride	25.0	21.6		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.9		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	23.8		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	0.75	J	25.0	20.3		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176901-N-2 MSD
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	28.9		ug/L		116	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	24.6		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	56 - 136	1	15
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124	4	15
Vinyl chloride	0.75	J	25.0	20.5		ug/L		79	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.98		ug/L		100	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-I-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

GC/MS VOA

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176894-2	MW-147S_111822	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176901-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 554038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176894-1	TRIP BLANK_197	Total/NA	Water	8260D	
240-176894-2	MW-147S_111822	Total/NA	Water	8260D	
MB 240-554038/5	Method Blank	Total/NA	Water	8260D	
LCS 240-554038/4	Lab Control Sample	Total/NA	Water	8260D	
240-176901-H-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176901-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Client Sample ID: TRIP BLANK_197

Lab Sample ID: 240-176894-1

Date Collected: 11/18/22 00:00

Matrix: Water

Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 01:24

Client Sample ID: MW-147S_111822

Lab Sample ID: 240-176894-2

Date Collected: 11/18/22 11:40

Matrix: Water

Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 07:45
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 10:02

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

2.513.1

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: S. Sulcaria	TAT if different from below		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day (✓) 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_197	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-147s-111822	11/18/22	1140		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176894 Chain of Custody

Possible Hazard Identification: (✓) Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; (✓) Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 3440 Capitol Front yd.
Submit all results through Cadena at jromalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sulcaria	Arcadis	11/18/22 1500	Arcadis cold st.	Arcadis	11/18/22 1500
	ARCADIS	11/21/22 0840		EEA	11/21/22 0840
	EEA	11/21/22	Received in Laboratory by:	EETWC	11-22-940

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176894
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-22-22 Opened on 11-22-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 3.2 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286791
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62070 Yes No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176894-1
Sample date: 2022-11-18
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176894-1

		Sample Name:	TRIP BLANK_197				MW-147S_111822			
		Lab Sample ID:	2401768941				2401768942			
		Sample Date:	11/18/2022				11/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.2	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176894-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47920R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176894-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_197	240-176894-1	Water	11/18/2022		X	
MW-147S_111822	240-176894-2	Water	11/18/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_197 MW-147S_111822	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 14, 2022

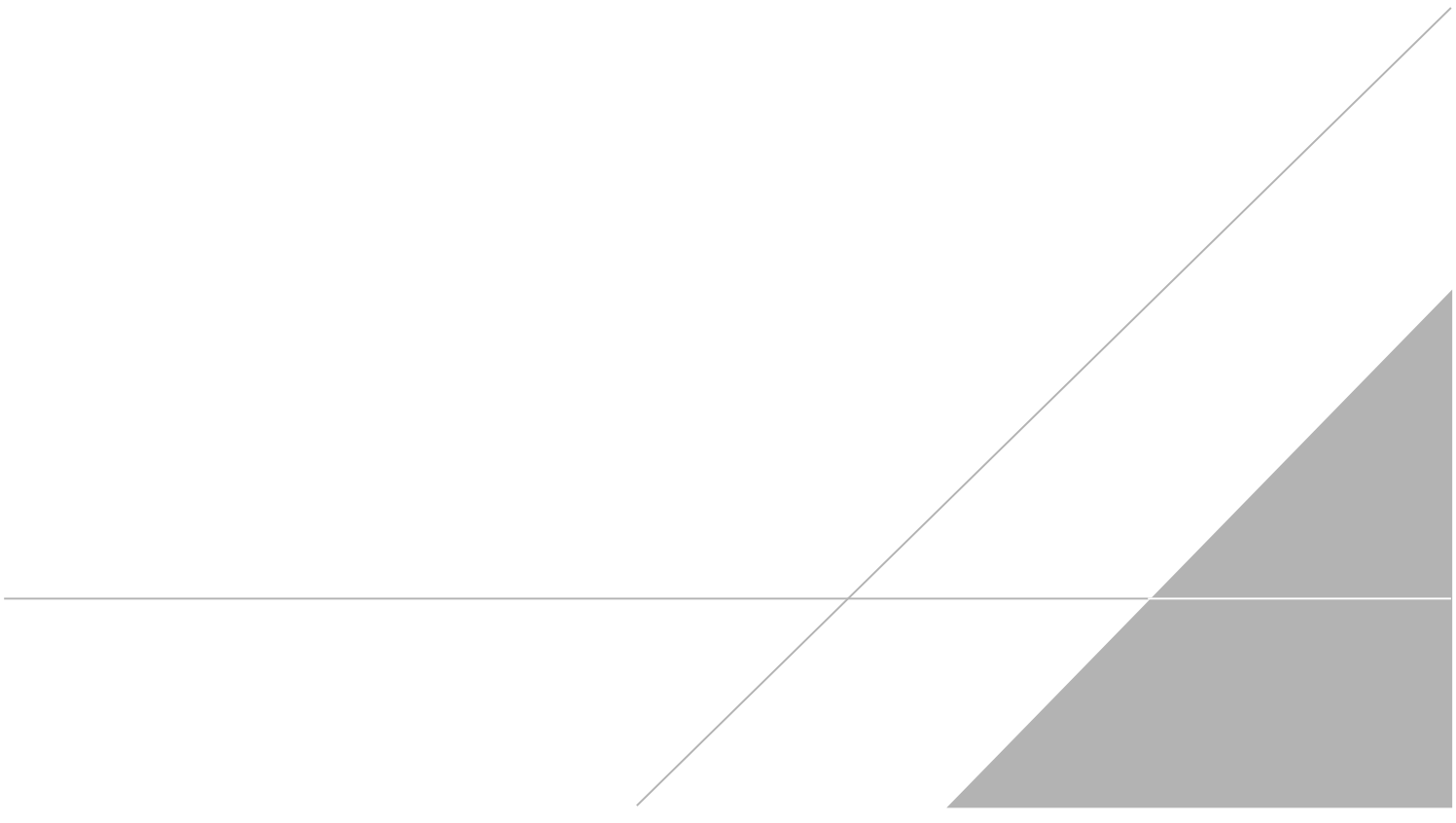
PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



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Chain of Custody Record

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TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: S. Sulcaria	TAT if different from below		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day ☑ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_197	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-147s-111822	11/18/22	1140		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176894 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 3440! Capitol Front yd.
Submit all results through Cadena at jfomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sulcaria	Arcadis	11/18/22 1500	Arcadis cold st.	Arcadis	11/18/22 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/22 0840		EEPA	11/21/22 0840
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEPA	11/21/22		FETWC	11-22-940

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Client Sample ID: TRIP BLANK_197
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176894-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 01:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 01:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 01:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 01:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*12/01/22 01:24*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*12/01/22 01:24*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*12/01/22 01:24*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*12/01/22 01:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176894-1

Client Sample ID: MW-147S_111822
Date Collected: 11/18/22 11:40
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176894-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 10:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/29/22 10:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 07:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 07:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 07:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 07:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 07:45	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			12/01/22 07:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*12/01/22 07:45*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 07:45*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 07:45*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 07:45*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:23:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176249-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Job ID: 240-176249-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176249-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176249-1	TRIP BLANK_08	Water	11/08/22 00:00	11/11/22 08:00
240-176249-2	MW-127S_110822	Water	11/08/22 11:44	11/11/22 08:00
240-176249-3	DUP-14	Water	11/08/22 00:00	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Client Sample ID: TRIP BLANK_08 — Lab Sample ID: 240-176249-1

No Detections.

Client Sample ID: MW-127S_110822 — Lab Sample ID: 240-176249-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.8		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-14 — Lab Sample ID: 240-176249-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.9		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Client Sample ID: TRIP BLANK_08

Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176249-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 17:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 17:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 17:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/17/22 17:48*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 17:48*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 17:48*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/17/22 17:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Client Sample ID: MW-127S_110822
Date Collected: 11/08/22 11:44
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176249-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/21/22 04:46*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:13	1
Vinyl chloride	**2.8**		1.0	0.45	ug/L			11/17/22 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/17/22 18:13*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/17/22 18:13*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 18:13*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/17/22 18:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Client Sample ID: DUP-14
Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176249-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 21:41*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:38	1
Vinyl chloride	**2.9**		1.0	0.45	ug/L			11/17/22 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/17/22 18:38*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/17/22 18:38*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 18:38*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/17/22 18:38*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176249-1	TRIP BLANK_08	114	78	95	108
240-176249-2	MW-127S_110822	112	73	95	106
240-176249-3	DUP-14	116	79	95	108
240-176249-3 MS	DUP-14	97	99	97	95
240-176249-3 MSD	DUP-14	91	98	97	94
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176249-2	MW-127S_110822	81
240-176249-3	DUP-14	79
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
240-176530-B-2 MS	Matrix Spike	79
240-176530-B-2 MSD	Matrix Spike Duplicate	81
LCS 240-552843/3	Lab Control Sample	78
LCS 240-553220/3	Lab Control Sample	79
MB 240-552843/4	Method Blank	78
MB 240-553220/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.0		ug/L		104	63 - 134
cis-1,2-Dichloroethene	25.0	26.0		ug/L		104	77 - 123
Tetrachloroethene	25.0	25.1		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	75 - 124
Trichloroethene	25.0	24.3		ug/L		97	70 - 122
Vinyl chloride	12.5	10.8		ug/L		87	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: DUP-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: DUP-14
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: 240-176249-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: DUP-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	94		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		66 - 120		11/20/22 22:52	1

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.84		ug/L		88	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		66 - 120

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: MB 240-553220/5
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 18:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/22/22 18:19*	*1*

Lab Sample ID: LCS 240-553220/3
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.37		ug/L		94	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MS
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MSD
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.85		ug/L		98	51 - 153	2	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176530-B-2 MSD
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

GC/MS VOA

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176249-1	TRIP BLANK_08	Total/NA	Water	8260D	
240-176249-2	MW-127S_110822	Total/NA	Water	8260D	
240-176249-3	DUP-14	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-3 MS	DUP-14	Total/NA	Water	8260D	
240-176249-3 MSD	DUP-14	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176249-2	MW-127S_110822	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176249-3	DUP-14	Total/NA	Water	8260D SIM	
MB 240-553220/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553220/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176530-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176530-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Client Sample ID: TRIP BLANK_08

Lab Sample ID: 240-176249-1

Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 17:48

Client Sample ID: MW-127S_110822

Lab Sample ID: 240-176249-2

Date Collected: 11/08/22 11:44
Matrix: Water
Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 18:13
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 04:46

Client Sample ID: DUP-14

Lab Sample ID: 240-176249-3

Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 18:38
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/22/22 21:41

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176249-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Jehnie Ferrelin	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_08	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-127S_110822	11/08/22	11:44		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-14	11/08/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-176249 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34424 Beacon, side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jehnie Ferrelin	Arcadis	11/08/22 17:40	Pool Cold Storage	Arcadis	11/08/22 17:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		EEN A	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETDC	11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176249
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-11-22 Opened on 11-11-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity leak Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176249

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176249-1
Sample date: 2022-11-08
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176249-1

		Sample Name:	TRIP BLANK_08				MW-127S_110822				DUP-14			
		Lab Sample ID:	2401762491				2401762492				2401762493			
		Sample Date:	11/8/2022				11/8/2022				11/8/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	2.8	1.0	ug/l	---	2.9	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

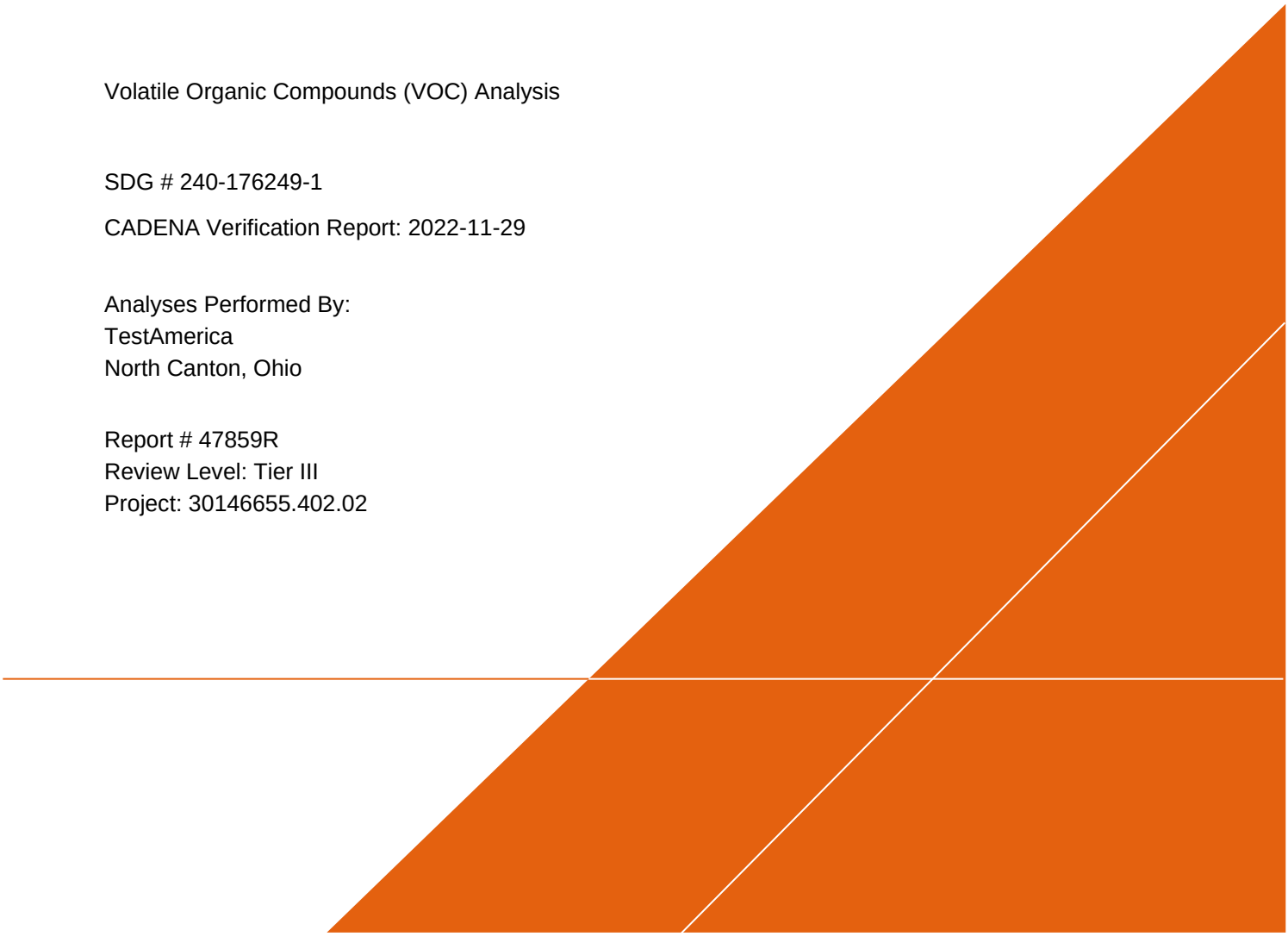
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176249-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47859R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176249-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_08	240-176249-1	Water	11/08/22		X	
MW-127S_110822	240-176249-2	Water	11/08/22		X	X
DUP-14	240-176249-3	Water	11/08/22	MW-127S_110822	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-127S_110822 / DUP-14	Vinyl chloride	2.8	2.9	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Felicia Ferrelin	TAT if different from below: 10 day; 3 weeks / ✓ 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_08	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-127S_110822	11/08/22	11:44		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-14	11/08/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-176249 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client ✓ Disposal By Lab Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34424 Deacon, side yard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Felicia Ferrelin	Arcadis	11/08/22 17:40	Novi Cold Storage	Arcadis	11/08/22 17:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		EETA	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETMC	11-11-22 800

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11/29/2022
8:22 AM

Client Sample ID: TRIP BLANK_08

Lab Sample ID: 240-176249-1
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 17:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 17:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 17:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 17:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*11/17/22 17:48*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 17:48*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 17:48*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/17/22 17:48*	*1*

Client Sample ID: MW-127S_110822

Lab Sample ID: 240-176249-2
Date Collected: 11/08/22 11:44
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/21/22 04:46*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:13	1
Vinyl chloride	**2.8**		1.0	0.45	ug/L			11/17/22 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/17/22 18:13*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/17/22 18:13*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 18:13*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/17/22 18:13*	*1*

Client Sample ID: DUP-14

Lab Sample ID: 240-176249-3
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 21:41*	*1*

Client Sample ID: DUP-14
Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176249-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 18:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 18:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 18:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 18:38	1
Vinyl chloride	**2.9**		1.0	0.45	ug/L			11/17/22 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*62 - 137*		*11/17/22 18:38*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/17/22 18:38*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/17/22 18:38*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*11/17/22 18:38*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176897-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Eurofins Canton

Job Notes

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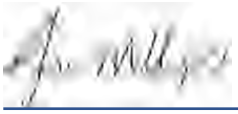

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Job ID: 240-176897-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176897-1

Comments
No additional comments.

Receipt
The samples were received on 11/22/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176897-1	TRIP BLANK_192	Water	11/18/22 00:00	11/22/22 09:40
240-176897-2	MW-103S_111822	Water	11/18/22 13:40	11/22/22 09:40
240-176897-3	DUP-09	Water	11/18/22 00:00	11/22/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: TRIP BLANK_192 — Lab Sample ID: 240-176897-1

No Detections.

Client Sample ID: MW-103S_111822 — Lab Sample ID: 240-176897-2

No Detections.

Client Sample ID: DUP-09 — Lab Sample ID: 240-176897-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: TRIP BLANK_192
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176897-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 02:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 02:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 02:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 02:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 02:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 02:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*12/01/22 02:15*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*12/01/22 02:15*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*12/01/22 02:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*12/01/22 02:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: MW-103S_111822
Date Collected: 11/18/22 13:40
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176897-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 10:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/29/22 10:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 12:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 12:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 12:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 12:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 12:25*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 12:25*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 12:25*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 12:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: DUP-09
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176897-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 11:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/29/22 11:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 12:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 12:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 12:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 12:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*12/01/22 12:50*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 12:50*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 12:50*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*12/01/22 12:50*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176897-1	TRIP BLANK_192	92	99	105	99
240-176897-2	MW-103S_111822	89	97	103	95
240-176897-3	DUP-09	91	97	103	94
240-176901-H-2 MS	Matrix Spike	83	97	105	96
240-176901-N-2 MSD	Matrix Spike Duplicate	83	97	105	96
240-176993-F-1 MS	Matrix Spike	84	97	106	95
240-176993-I-1 MSD	Matrix Spike Duplicate	83	97	105	95
LCS 240-554038/4	Lab Control Sample	85	100	105	99
LCS 240-554040/3	Lab Control Sample	84	98	105	95
MB 240-554038/5	Method Blank	93	102	106	103
MB 240-554040/4	Method Blank	89	97	103	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176897-2	MW-103S_111822	103
240-176897-3	DUP-09	107
240-176901-I-2 MS	Matrix Spike	99
240-176901-O-2 MSD	Matrix Spike Duplicate	104
LCS 240-553633/3	Lab Control Sample	109
MB 240-553633/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-554038/5
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/22 23:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/22 23:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/22 23:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/22 23:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/30/22 23:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/30/22 23:42*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/30/22 23:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/30/22 23:42*	*1*

Lab Sample ID: LCS 240-554038/4
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	23.4		ug/L		94	77 - 123
Tetrachloroethene	25.0	25.2		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.2		ug/L		93	70 - 122
Vinyl chloride	25.0	21.6		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.9		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	23.8		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	0.75	J	25.0	20.3		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176901-N-2 MSD
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	28.9		ug/L		116	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	24.6		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	56 - 136	1	15
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124	4	15
Vinyl chloride	0.75	J	25.0	20.5		ug/L		79	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: MB 240-554040/4
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 11:34*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 11:34*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 11:34*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 11:34*	*1*

Lab Sample ID: LCS 240-554040/3
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.0		ug/L		116	63 - 134
cis-1,2-Dichloroethene	25.0	22.3		ug/L		89	77 - 123
Tetrachloroethene	25.0	24.5		ug/L		98	76 - 123
trans-1,2-Dichloroethene	25.0	22.0		ug/L		88	75 - 124
Trichloroethene	25.0	21.4		ug/L		86	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-554040/3
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	19.7		ug/L		79	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176993-F-1 MS
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176993-I-1 MSD
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrachloroethene	1.0	U	25.0	23.2		ug/L		93	62 - 131	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.98		ug/L		100	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-I-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

GC/MS VOA

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176897-2	MW-103S_111822	Total/NA	Water	8260D SIM	
240-176897-3	DUP-09	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176901-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 554038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176897-1	TRIP BLANK_192	Total/NA	Water	8260D	
MB 240-554038/5	Method Blank	Total/NA	Water	8260D	
LCS 240-554038/4	Lab Control Sample	Total/NA	Water	8260D	
240-176901-H-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176901-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 554040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176897-2	MW-103S_111822	Total/NA	Water	8260D	
240-176897-3	DUP-09	Total/NA	Water	8260D	
MB 240-554040/4	Method Blank	Total/NA	Water	8260D	
LCS 240-554040/3	Lab Control Sample	Total/NA	Water	8260D	
240-176993-F-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-176993-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: TRIP BLANK_192

Lab Sample ID: 240-176897-1

Date Collected: 11/18/22 00:00

Matrix: Water

Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 02:15

Client Sample ID: MW-103S_111822

Lab Sample ID: 240-176897-2

Date Collected: 11/18/22 13:40

Matrix: Water

Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554040	CS	EET CAN	12/01/22 12:25
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 10:51

Client Sample ID: DUP-09

Lab Sample ID: 240-176897-3

Date Collected: 11/18/22 00:00

Matrix: Water

Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554040	CS	EET CAN	12/01/22 12:50
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 11:15

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396			
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		1 of 1 COCs		
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		For lab use only		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Walk-in client		
Project Number: 30146655.402.04	Shipping/Tracking No:			Lab sampling		
PO # 30146655.402.04				Job/SDG No:		

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_192	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-103s-111822	11/18/22	1340		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-04	11/18/22	—		6						6					N	G	X	X	X	X	X	X	X	1

240-176897 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34424 Capitol Beach Rd

Submit all results through Cadena at jtomalia@cadenaco.com Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/18/22 1500	Arcadis cold storage	Arcadis	11/18/22 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/22 0840		EETA	11/21/22 0840
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/21/22		EETDC	11-22-22 940

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 476947
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-22-22 Opened on 11-22-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 3.2 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA	pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62020	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176897-1
Sample date: 2022-11-18
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176897-1

		Sample Name:	TRIP BLANK_192				MW-103S_111822				DUP-09			
		Lab Sample ID:	2401768971				2401768972				2401768973			
		Sample Date:	11/18/2022				11/18/2022				11/18/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176897-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47922R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176897-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_192	240-176897-1	Water	11/18/2022		X	
MW-103S_111822	240-176897-2	Water	11/18/2022		X	X
DUP-09	240-176897-3	Water	11/18/2022	MW-103S_111822	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_192 MW-103S_111822 DUP-09	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-103S_111822 / DUP-09	All compounds	U	U	AC

Notes:
AC – Acceptable
U – non-detect

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 14, 2022

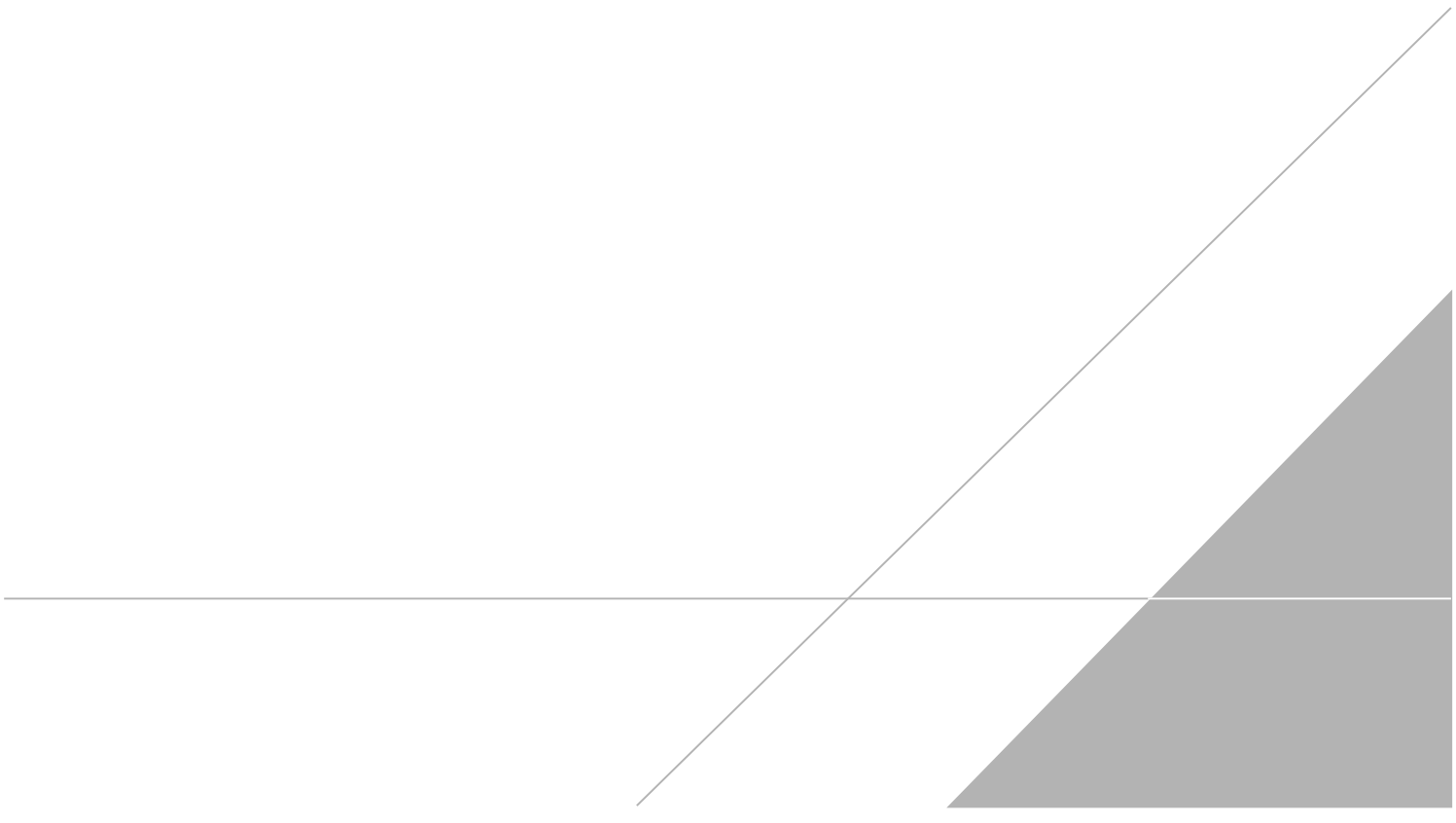
PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_192	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-103s-111822	11/18/22	1340		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
DUP-004	11/18/22	—		6						6					N	G	X	X	X	X	X	X	X	1

240-176897 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34424 Capitol Beach Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/18/22 1500	Arcadis cold storage	Arcadis	11/18/22 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/22 0840		EETA	11/21/22 0840
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/21/22		EETDC	11-22-22 940

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12/6/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: TRIP BLANK_192
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176897-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 02:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 02:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 02:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 02:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 02:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 02:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*12/01/22 02:15*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*12/01/22 02:15*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*12/01/22 02:15*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*12/01/22 02:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: MW-103S_111822
Date Collected: 11/18/22 13:40
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176897-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 10:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/29/22 10:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 12:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 12:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 12:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 12:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 12:25*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 12:25*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 12:25*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 12:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176897-1

Client Sample ID: DUP-09
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176897-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 11:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/29/22 11:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 12:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 12:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 12:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 12:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 12:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*12/01/22 12:50*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 12:50*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 12:50*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*12/01/22 12:50*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:23:36 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176251-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

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Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Job ID: 240-176251-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176251-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176251-1	TRIP BLANK_28	Water	11/09/22 00:00	11/11/22 08:00
240-176251-2	MW-149S_110922	Water	11/09/22 13:25	11/11/22 08:00
240-176251-3	DUP-10	Water	11/09/22 00:00	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Client Sample ID: TRIP BLANK_28 — Lab Sample ID: 240-176251-1

No Detections.

Client Sample ID: MW-149S_110922 — Lab Sample ID: 240-176251-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-10 — Lab Sample ID: 240-176251-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.7		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Client Sample ID: TRIP BLANK_28

Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176251-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 13:11*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/22 13:11*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 13:11*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 13:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Client Sample ID: MW-149S_110922
Date Collected: 11/09/22 13:25
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176251-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 05:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/21/22 05:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:16	1
Vinyl chloride	**2.5**		1.0	0.45	ug/L			11/17/22 15:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 15:16*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 15:16*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 15:16*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 15:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Client Sample ID: DUP-10

Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176251-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 05:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 05:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:41	1
Vinyl chloride	**2.7**		1.0	0.45	ug/L			11/17/22 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 15:41*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 15:41*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 15:41*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 15:41*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176251-1	TRIP BLANK_28	100	93	100	91
240-176251-2	MW-149S_110922	100	91	101	91
240-176251-3	DUP-10	100	91	100	91
240-176252-C-2 MS	Matrix Spike	98	91	99	93
240-176252-E-2 MSD	Matrix Spike Duplicate	98	92	98	93
LCS 240-552444/4	Lab Control Sample	96	94	100	96
MB 240-552444/7	Method Blank	99	93	100	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176251-2	MW-149S_110922	78
240-176251-3	DUP-10	79
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552444/7
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 12:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 12:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 12:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 12:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 12:46*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/22 12:46*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 12:46*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/17/22 12:46*	*1*

Lab Sample ID: LCS 240-552444/4
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.3		ug/L		89	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176252-C-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	20.6		ug/L		82	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	21.3		ug/L		85	61 - 124
Vinyl chloride	1.0	U	12.5	13.9		ug/L		111	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176252-C-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: 240-176252-E-2 MSD
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	19.8		ug/L		79	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.6		ug/L		83	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	14.4		ug/L		115	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		66 - 120		11/20/22 22:52	1

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.84		ug/L		88	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		66 - 120

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

GC/MS VOA

Analysis Batch: 552444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176251-1	TRIP BLANK_28	Total/NA	Water	8260D	
240-176251-2	MW-149S_110922	Total/NA	Water	8260D	
240-176251-3	DUP-10	Total/NA	Water	8260D	
MB 240-552444/7	Method Blank	Total/NA	Water	8260D	
LCS 240-552444/4	Lab Control Sample	Total/NA	Water	8260D	
240-176252-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176252-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176251-2	MW-149S_110922	Total/NA	Water	8260D SIM	
240-176251-3	DUP-10	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Client Sample ID: TRIP BLANK_28

Lab Sample ID: 240-176251-1

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 13:11

Client Sample ID: MW-149S_110922

Lab Sample ID: 240-176251-2

Date Collected: 11/09/22 13:25

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 15:16
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 05:11

Client Sample ID: DUP-10

Lab Sample ID: 240-176251-3

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 15:41
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 05:37

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176251-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Chiara Ferreri	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_28	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-149S_110922	11/09/22	1325		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM
DUP-10	11/09/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-176251 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34450 Beacon - back yard (EF) 34450 Beacon; back yard

Submit all results through Cadena at jtomalia@cadenaco.com (Cadena #E203631)

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Chiara Ferreri	Arcadis	11/04/22 15:15	Novi cold storage	Arcadis	11/09/22 15:15
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/9/22 1515		EEN	11/9/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETMC	11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176251 11-11-22
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Moya

Cooler Received on 11-11-22 Opened on 11-11-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC28697
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by: _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176251

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176251-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176251-1

		Sample Name:	TRIP BLANK_28				MW-149S_110922				DUP-10			
		Lab Sample ID:	2401762511				2401762512				2401762513			
		Sample Date:	11/9/2022				11/9/2022				11/9/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	2.5	1.0	ug/l	---	2.7	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

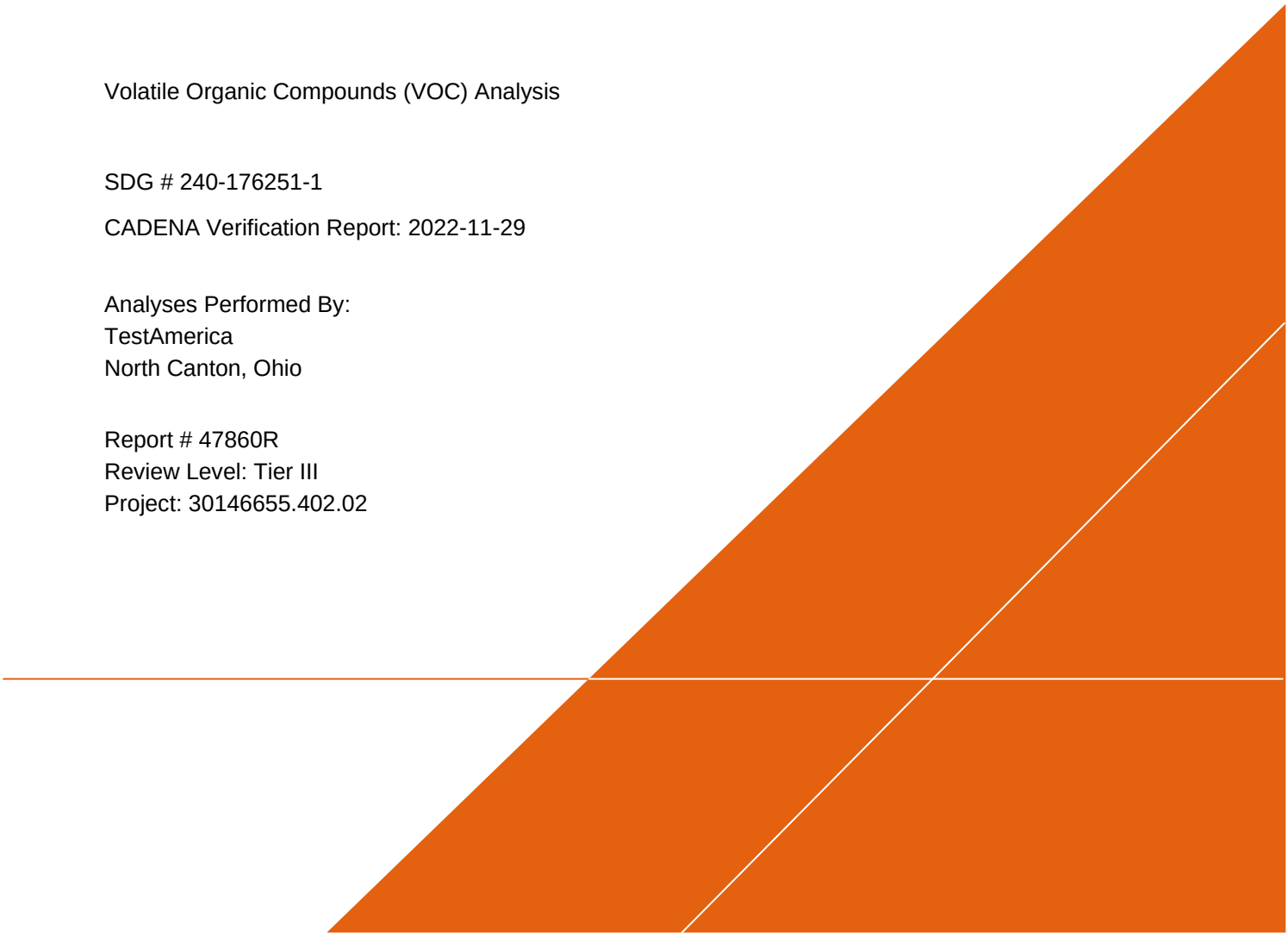
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176251-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47860R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176251-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_28	240-176251-1	Water	11/09/22		X	
MW-149S_110922	240-176251-2	Water	11/09/22		X	X
DUP-10	240-176251-3	Water	11/09/22	MW-149S_110922	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-149S_110922 / DUP-10	Vinyl chloride	2.5	2.7	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Olivia Ferreira	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_28	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1495_110922	11/09/22	1325		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM
DUP-10	11/09/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-176251 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~3445~~ 34450 Beacon ~~Beacon~~ ; ~~back yard~~ back yard

Submit all results through Cadena at jtomalia@cadenaco.com (Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Olivia Ferreira	Arcadis	11/04/22 15:15	Yoni cold Storage	Arcadis	11/09/22 15:15
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/9/22 1515		FEN	11/9/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				FETPC	11-11-22 800

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11/29/2022
8:23 AM

Client Sample ID: TRIP BLANK_28
Lab Sample ID: 240-176251-1
Date Collected: 11/09/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 13:11*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/22 13:11*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 13:11*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 13:11*	*1*

Client Sample ID: MW-149S_110922
Lab Sample ID: 240-176251-2
Date Collected: 11/09/22 13:25
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 05:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/21/22 05:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:16	1
Vinyl chloride	**2.5**		1.0	0.45	ug/L			11/17/22 15:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 15:16*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 15:16*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 15:16*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 15:16*	*1*

Client Sample ID: DUP-10
Lab Sample ID: 240-176251-3
Date Collected: 11/09/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 05:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 05:37*	*1*

Client Sample ID: DUP-10
Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176251-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:41	1
Vinyl chloride	**2.7**		1.0	0.45	ug/L			11/17/22 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 15:41*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 15:41*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 15:41*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 15:41*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176833-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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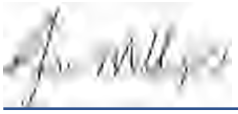

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176833-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176833-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176833-1	TRIP BLANK_188	Water	11/17/22 00:00	11/19/22 08:00
240-176833-2	MW-169S_111722	Water	11/17/22 13:36	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Client Sample ID: TRIP BLANK_188 — Lab Sample ID: 240-176833-1

No Detections.

Client Sample ID: MW-169S_111722 — Lab Sample ID: 240-176833-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Client Sample ID: TRIP BLANK_188
Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176833-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 22:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 22:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 22:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/28/22 22:01*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/28/22 22:01*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/22 22:01*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/28/22 22:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Client Sample ID: MW-169S_111722
Date Collected: 11/17/22 13:36
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176833-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			11/28/22 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/28/22 19:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 01:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 01:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 01:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 01:24*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/29/22 01:24*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 01:24*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/22 01:24*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176833-1	TRIP BLANK_188	92	98	103	98
240-176833-2	MW-169S_111722	92	102	103	100
240-176837-F-2 MS	Matrix Spike	83	100	105	97
240-176837-F-2 MSD	Matrix Spike Duplicate	83	100	104	97
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176833-2	MW-169S_111722	97
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176833-2	MW-169S_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176833-1	TRIP BLANK_188	Total/NA	Water	8260D	
240-176833-2	MW-169S_111722	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176837-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Client Sample ID: TRIP BLANK_188

Lab Sample ID: 240-176833-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/28/22 22:01

Client Sample ID: MW-169S_111722

Lab Sample ID: 240-176833-2

Date Collected: 11/17/22 13:36

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 01:24
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 19:43

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_188	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1695-111722	11/17/22	13:36		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176833 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34450 Capitol

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1623	Novi Cold Storage	Arcadis	11/17/22 1623
	ARCADIS	11/18/22 0945		EET A	11/18/22 0945
J. Hale	~~EE~~ TA	11/18/22 1002	Received in Laboratory by:	~~EE~~ TA	11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 170833
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. A. A.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-21-22

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176833-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176833-1

		Sample Name:	TRIP BLANK_188				MW-169S_111722			
		Lab Sample ID:	2401768331				2401768332			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					1.1	2.0	ug/l	J

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

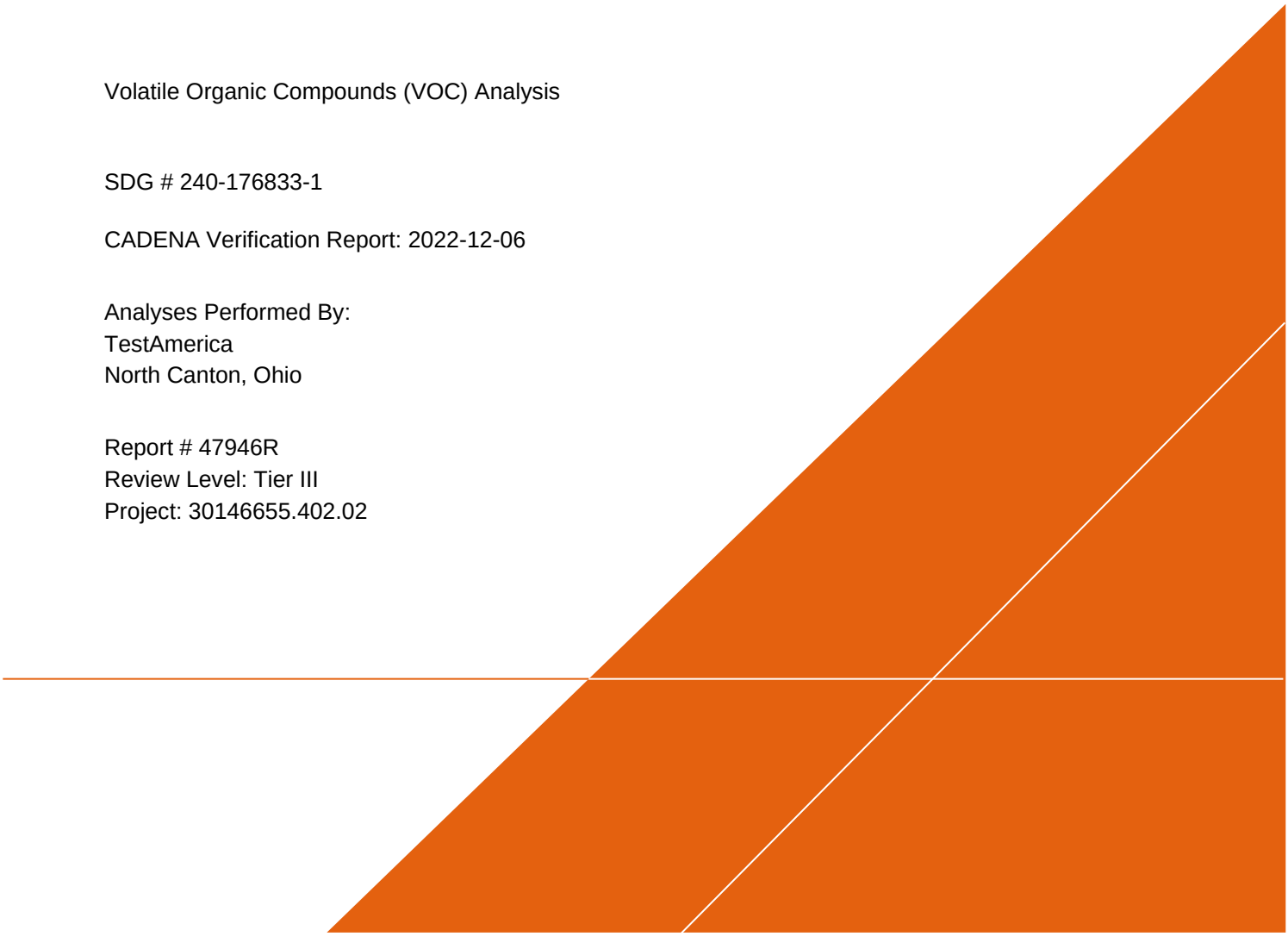
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176833-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47946R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176833-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_188	240-176833-1	Water	11/17/22		X	
MW-169S_111722	240-176833-2	Water	11/17/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_188 MW-169S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Initial / Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Initial / Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 15, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 188	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1695- 111722	11/17/22	13:36		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176833 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34450 Capitol

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1623	Novi Cold Storage	Arcadis	11/17/22 1623
	ARCADIS	11/18/22 0945		EET A	11/18/22 0945
J. Hale	~~EE~~ TA	11/18/22 1002	Received in Laboratory by:	~~EE~~ TA	11/19/22 8:00

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12/6/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Client Sample ID: TRIP BLANK_188
Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176833-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 22:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 22:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 22:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/28/22 22:01*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/28/22 22:01*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/28/22 22:01*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/28/22 22:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176833-1

Client Sample ID: MW-169S_111722
Date Collected: 11/17/22 13:36
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176833-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			11/28/22 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/28/22 19:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 01:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 01:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 01:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 01:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 01:24*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/29/22 01:24*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 01:24*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/22 01:24*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176844-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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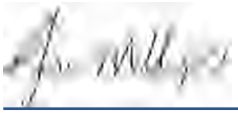

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Job ID: 240-176844-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176844-1

Comments
No additional comments.

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176844-1	TRIP BLANK_193	Water	11/17/22 00:00	11/19/22 08:00
240-176844-2	MW-168S_111722	Water	11/17/22 12:55	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Client Sample ID: TRIP BLANK_193 — Lab Sample ID: 240-176844-1

No Detections.

Client Sample ID: MW-168S_111722 — Lab Sample ID: 240-176844-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Client Sample ID: TRIP BLANK_193

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176844-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 09:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 09:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 09:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 09:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 09:26*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/22 09:26*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 09:26*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/29/22 09:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Client Sample ID: MW-168S_111722
Date Collected: 11/17/22 12:55
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176844-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 08:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 08:01*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 14:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 14:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 14:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 14:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 14:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 14:55*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 14:55*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 14:55*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 14:55*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176843-D-5 MS	Matrix Spike	85	99	104	99
240-176843-D-5 MSD	Matrix Spike Duplicate	83	98	104	96
240-176844-1	TRIP BLANK_193	91	97	101	96
240-176844-2	MW-168S_111722	91	99	103	98
LCS 240-553659/3	Lab Control Sample	84	101	105	97
MB 240-553659/4	Method Blank	91	99	101	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176844-2	MW-168S_111722	102
240-176901-I-2 MS	Matrix Spike	99
240-176901-O-2 MSD	Matrix Spike Duplicate	104
LCS 240-553633/3	Lab Control Sample	109
MB 240-553633/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553659/4
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 06:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 06:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 06:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 06:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 06:53*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 06:53*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 06:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 06:53*	*1*

Lab Sample ID: LCS 240-553659/3
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		97	77 - 123
Tetrachloroethene	25.0	25.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	25.0	25.3		ug/L		101	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	28.4		ug/L		114	56 - 135
cis-1,2-Dichloroethene	4.8		25.0	32.9		ug/L		112	66 - 128
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131
trans-1,2-Dichloroethene	0.74	J	25.0	24.1		ug/L		93	56 - 136
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124
Vinyl chloride	5.4		25.0	32.1		ug/L		107	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176843-D-5 MSD
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	4	26
cis-1,2-Dichloroethene	4.8		25.0	31.3		ug/L		106	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131	2	20
trans-1,2-Dichloroethene	0.74	J	25.0	23.2		ug/L		90	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	2	15
Vinyl chloride	5.4		25.0	30.9		ug/L		102	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.98		ug/L		100	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-I-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

GC/MS VOA

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176844-2	MW-168S_111722	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176901-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176844-1	TRIP BLANK_193	Total/NA	Water	8260D	
240-176844-2	MW-168S_111722	Total/NA	Water	8260D	
MB 240-553659/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553659/3	Lab Control Sample	Total/NA	Water	8260D	
240-176843-D-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-176843-D-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Client Sample ID: TRIP BLANK_193

Lab Sample ID: 240-176844-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 09:26

Client Sample ID: MW-168S_111722

Lab Sample ID: 240-176844-2

Date Collected: 11/17/22 12:55

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 14:55
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 08:01

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

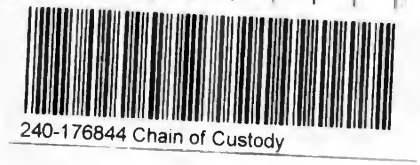
TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: S. Sukaria	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_193		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-68s-111722	11/17/22	1255		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34480 Capitol st front yd.

Submit all results through Cadena at jtomalla@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/17/22 1350	Arcadis cold St.	Arcadis	11/17/22 1350
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945		EETA	11/18/22 0945
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/18/22 1002		EEC	11/19/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176844
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. A. A.

Cooler Received on 11/19/22 Opened on 11/19/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Done 11.21.22	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176844-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176844-1

		Sample Name:	TRIP BLANK_193				MW-168S_111722			
		Lab Sample ID:	2401768441				2401768442			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176844-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47919R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176844-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_193	240-176844-1	Water	11/17/2022		X	
MW-168S_111722	240-176844-2	Water	11/17/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_193 MW-168S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 12, 2022

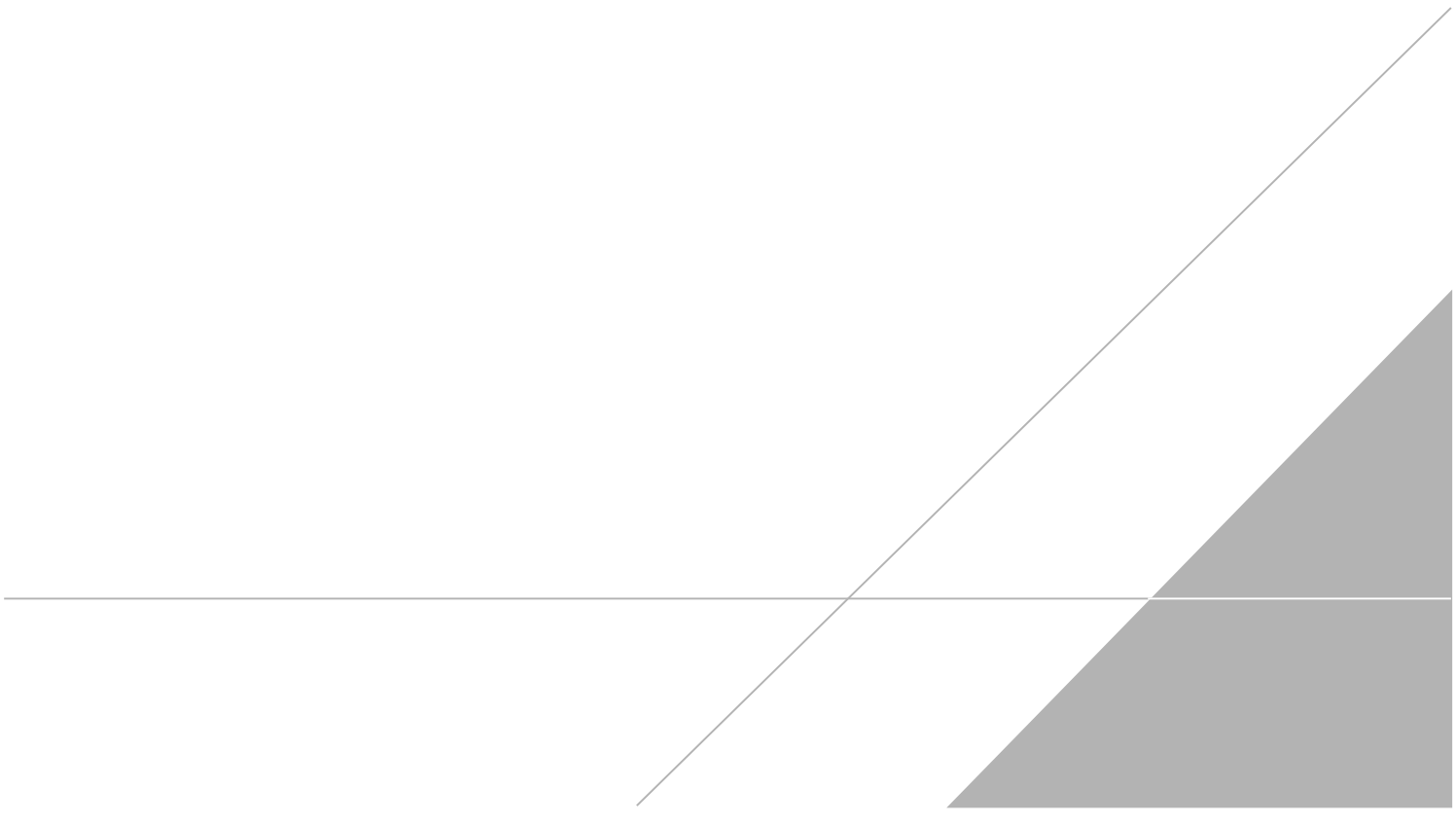
PEER REVIEW: Andrew Korycinski

DATE: December 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

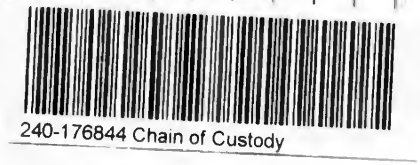
TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: S. Sukaria	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_193		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-68s-111722	11/17/22	1255		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34480 Capitol st front yd.

Submit all results through Cadena at jtomalla@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/17/22 1350	Arcadis cold St.	Arcadis	11/17/22 1350
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945		EEI-A	11/18/22 0945
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEI-A	11/18/22 1002		EEC	11/19/22 8:00

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12/6/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Client Sample ID: TRIP BLANK_193

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176844-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 09:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 09:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 09:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 09:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 09:26*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/22 09:26*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 09:26*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/29/22 09:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176844-1

Client Sample ID: MW-168S_111722
Date Collected: 11/17/22 12:55
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176844-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 08:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 08:01*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 14:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 14:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 14:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 14:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 14:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 14:55*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 14:55*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 14:55*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 14:55*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:57:24 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176078-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176078-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176078-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176078-1	TRIP BLANK_49	Water	11/07/22 00:00	11/09/22 09:45
240-176078-2	MW-163S_110722	Water	11/07/22 14:20	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Client Sample ID: TRIP BLANK_49 — Lab Sample ID: 240-176078-1

No Detections.

Client Sample ID: MW-163S_110722 — Lab Sample ID: 240-176078-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Client Sample ID: TRIP BLANK_49

Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176078-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/16/22 15:10*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/16/22 15:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/16/22 15:10*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 15:10*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Client Sample ID: MW-163S_110722
Date Collected: 11/07/22 14:20
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176078-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/15/22 16:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/22 19:09*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/22 19:09*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 19:09*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/16/22 19:09*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176069-C-2 MS	Matrix Spike	86	92	99	92
240-176069-F-2 MSD	Matrix Spike Duplicate	85	90	99	93
240-176078-1	TRIP BLANK_49	91	91	97	101
240-176078-2	MW-163S_110722	95	94	99	104
LCS 240-552229/5	Lab Control Sample	84	92	100	93
MB 240-552229/8	Method Blank	90	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176078-2	MW-163S_110722	108
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 13:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 13:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 13:35*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 13:35*	*1*

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	26.0		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-F-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176078-2	MW-163S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176078-1	TRIP BLANK_49	Total/NA	Water	8260D	
240-176078-2	MW-163S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176069-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Client Sample ID: TRIP BLANK_49

Lab Sample ID: 240-176078-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 15:10

Client Sample ID: MW-163S_110722

Lab Sample ID: 240-176078-2

Date Collected: 11/07/22 14:20

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 19:09
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 16:51

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176078-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks, 2 weeks (✓), 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 49	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-163S_110722	11/7/22	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176078 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34951 BEACON ST.

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
SAM SUKARIA	ARCADIS	11/7/22 1530	ARCADIS COLD STORAGE	ARCADIS	11/7/22 / 1530
	ARCADIS	11/8/22 0915		EET	11/8/22 / 0915
	EET	11-8-22 943		EETDC	11-9-22 945

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176078
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-9-22 Opened on 11-9-22

Cooler unpacked by: Danny Rojas

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286777
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION
Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 176078

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176078-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176078-1

		Sample Name:	TRIP BLANK_49				MW-163S_110722			
		Lab Sample ID:	2401760781				2401760782			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

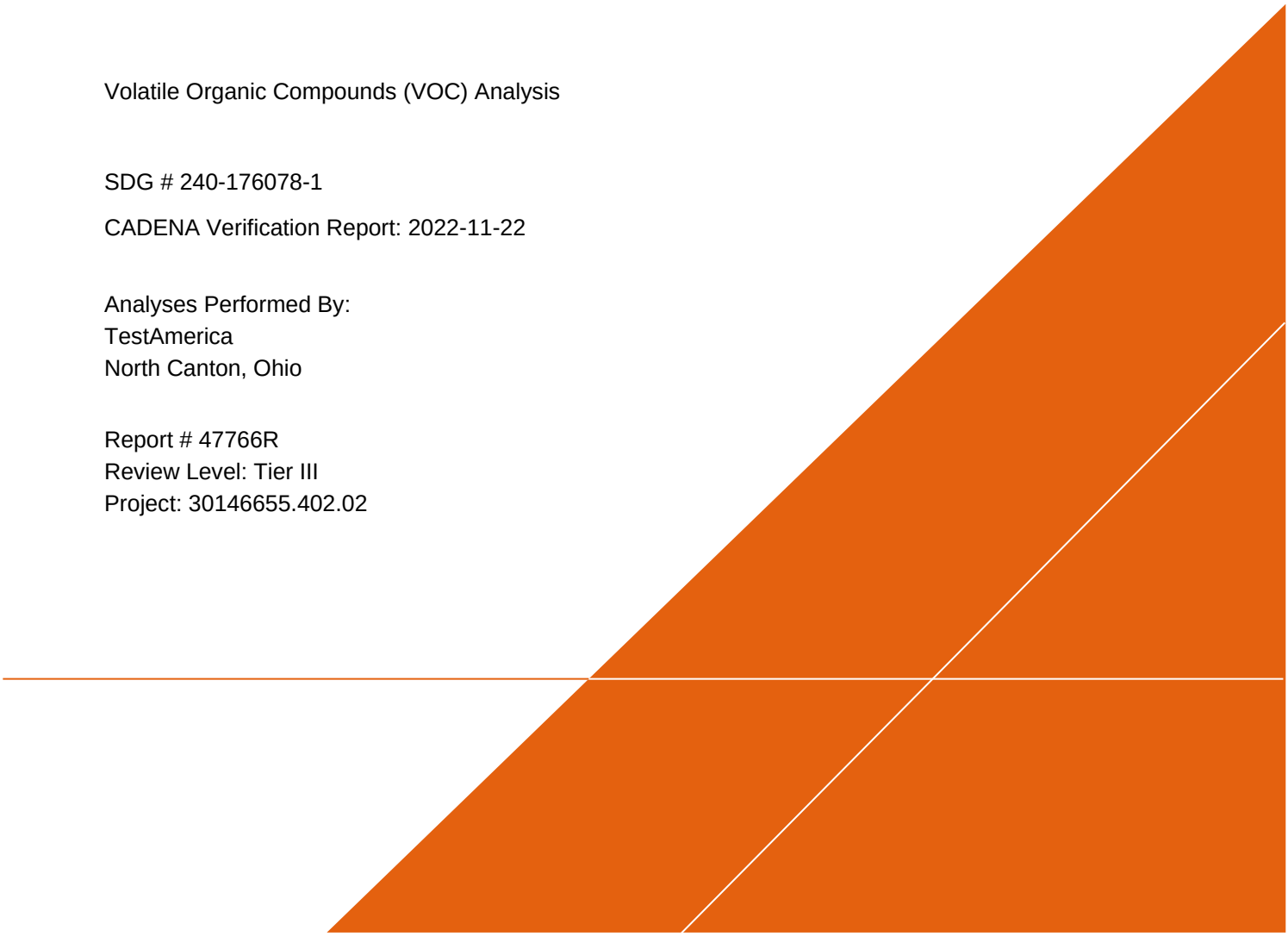
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176078-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47766R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176078-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_49	240-176078-1	Water	11/07/22		X	
MW-163S_110722	240-176078-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 05, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 06, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day ☑ 2 weeks ☐ 3 weeks ☐ 1 week ☐ 2 days ☐ 1 day	For lab use only: Walk-in client ☐ Lab sampling ☐ Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_49	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-163S_110722	11/7/22	1420		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176078 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34951 BEACON ST.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
SAM SUKARIA	ARCADIS	11/7/22 1530	ARCADIS COLD STORAGE	ARCADIS	11/7/22 / 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/8/22 0915		EET	11/8/22 / 0915
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EET	11-8-22 943		EETDC	11-9-22 945

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11/22/2022
7:57 AM

Client Sample ID: TRIP BLANK_49
Lab Sample ID: 240-176078-1

Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/16/22 15:10*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/16/22 15:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/16/22 15:10*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 15:10*	*1*

Client Sample ID: MW-163S_110722
Lab Sample ID: 240-176078-2

Date Collected: 11/07/22 14:20
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/15/22 16:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/22 19:09*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/22 19:09*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 19:09*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/16/22 19:09*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/18/2022 8:13:30 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176031-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176031-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176031-1

Receipt
The samples were received on 11/8/2022 5:25 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.0°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-552054 recovered above the upper control limit for 1,1-Dichloroethene. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_42 (240-176031-1), MW-164S_110422 (240-176031-2), (CCV 240-552054/4), (CCVIS 240-552054/3), (LCS 240-552054/5), (LCS 240-552054/6), (MB 240-552054/8), (240-176033-B-2), (240-176033-F-2 MS) and (240-176033-L-2 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176031-1	TRIP BLANK_42	Water	11/04/22 00:00	11/08/22 17:25
240-176031-2	MW-164S_110422	Water	11/04/22 13:00	11/08/22 17:25

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Client Sample ID: TRIP BLANK_42 — Lab Sample ID: 240-176031-1

No Detections.

Client Sample ID: MW-164S_110422 — Lab Sample ID: 240-176031-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Client Sample ID: TRIP BLANK_42
Date Collected: 11/04/22 00:00
Date Received: 11/08/22 17:25

Lab Sample ID: 240-176031-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 16:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 16:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 16:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 16:18*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/15/22 16:18*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 16:18*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/15/22 16:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Client Sample ID: MW-164S_110422
Date Collected: 11/04/22 13:00
Date Received: 11/08/22 17:25

Lab Sample ID: 240-176031-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 01:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/15/22 01:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 21:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 21:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 21:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 21:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/15/22 21:46*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/15/22 21:46*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/15/22 21:46*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 21:46*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176031-1	TRIP BLANK_42	101	79	93	97
240-176031-2	MW-164S_110422	108	73	92	103
240-176033-F-2 MS	Matrix Spike	92	99	98	94
240-176033-L-2 MSD	Matrix Spike Duplicate	90	97	96	92
LCS 240-552054/5	Lab Control Sample	90	94	97	93
MB 240-552054/8	Method Blank	101	81	96	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175884-G-2 MS	Matrix Spike	110
240-175884-M-2 MSD	Matrix Spike Duplicate	112
240-176031-2	MW-164S_110422	108
LCS 240-551906/3	Lab Control Sample	105
MB 240-551906/4	Method Blank	120

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552054/8

Matrix: Water
Analysis Batch: 552054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/15/22 15:02*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/15/22 15:02*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/15/22 15:02*	*1*

Lab Sample ID: LCS 240-552054/5

Matrix: Water
Analysis Batch: 552054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.0		ug/L		108	63 - 134
cis-1,2-Dichloroethene	25.0	26.5		ug/L		106	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.3		ug/L		105	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122
Vinyl chloride	12.5	10.4		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176033-F-2 MS

Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.8		ug/L		111	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	25.0	24.9		ug/L		100	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 136
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176033-F-2 MS
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176033-L-2 MSD
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.9		ug/L		112	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 136	4	15
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124	2	15
Vinyl chloride	1.0	U	12.5	9.93		ug/L		79	43 - 157	5	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551906/4
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*66 - 120*		*11/14/22 18:27*	*1*

Lab Sample ID: LCS 240-551906/3
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.69		ug/L		97	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-175884-G-2 MS
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*

Lab Sample ID: 240-175884-M-2 MSD
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

GC/MS VOA

Analysis Batch: 551906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176031-2	MW-164S_110422	Total/NA	Water	8260D SIM	
MB 240-551906/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551906/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175884-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175884-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176031-1	TRIP BLANK_42	Total/NA	Water	8260D	
240-176031-2	MW-164S_110422	Total/NA	Water	8260D	
MB 240-552054/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552054/5	Lab Control Sample	Total/NA	Water	8260D	
240-176033-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176033-L-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Client Sample ID: TRIP BLANK_42

Lab Sample ID: 240-176031-1

Date Collected: 11/04/22 00:00

Matrix: Water

Date Received: 11/08/22 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 16:18

Client Sample ID: MW-164S_110422

Lab Sample ID: 240-176031-2

Date Collected: 11/04/22 13:00

Matrix: Water

Date Received: 11/08/22 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 21:46
Total/NA	Analysis	8260D SIM		1	551906	CS	EET CAN	11/15/22 01:47

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176031-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks, ✓ 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_42	11/4/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1645_110422	11/4/22	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176031 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34637 BEACON ST.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time
SAM SUKARIA	ARCADIS	11/4/22 / 1407	ARCADIS COLD STORE	ARCADIS	11/4/22 1407
Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time:
	ARCADIS	11/7/22 / 1000		EETA	11/7/22 / 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/7/22 1002	Mandaly Block	eetnc	11-8-22 10:50

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11/18/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176031
Barberton Facility

Client Arcadis Site Name
Cooler Received on 11-8-22 Opened on 11-8-22
Cooler unpacked by: Mandaly
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # elnc Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/18/2022 8:13:30 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176031-1
Sample date: 2022-11-04
Report received by CADENA: 2022-11-18
Initial Data Verification completed by CADENA: 2022-11-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176031-1

		Sample Name:	TRIP BLANK_42				MW-164S_110422			
		Lab Sample ID:	2401760311				2401760312			
		Sample Date:	11/4/2022				11/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

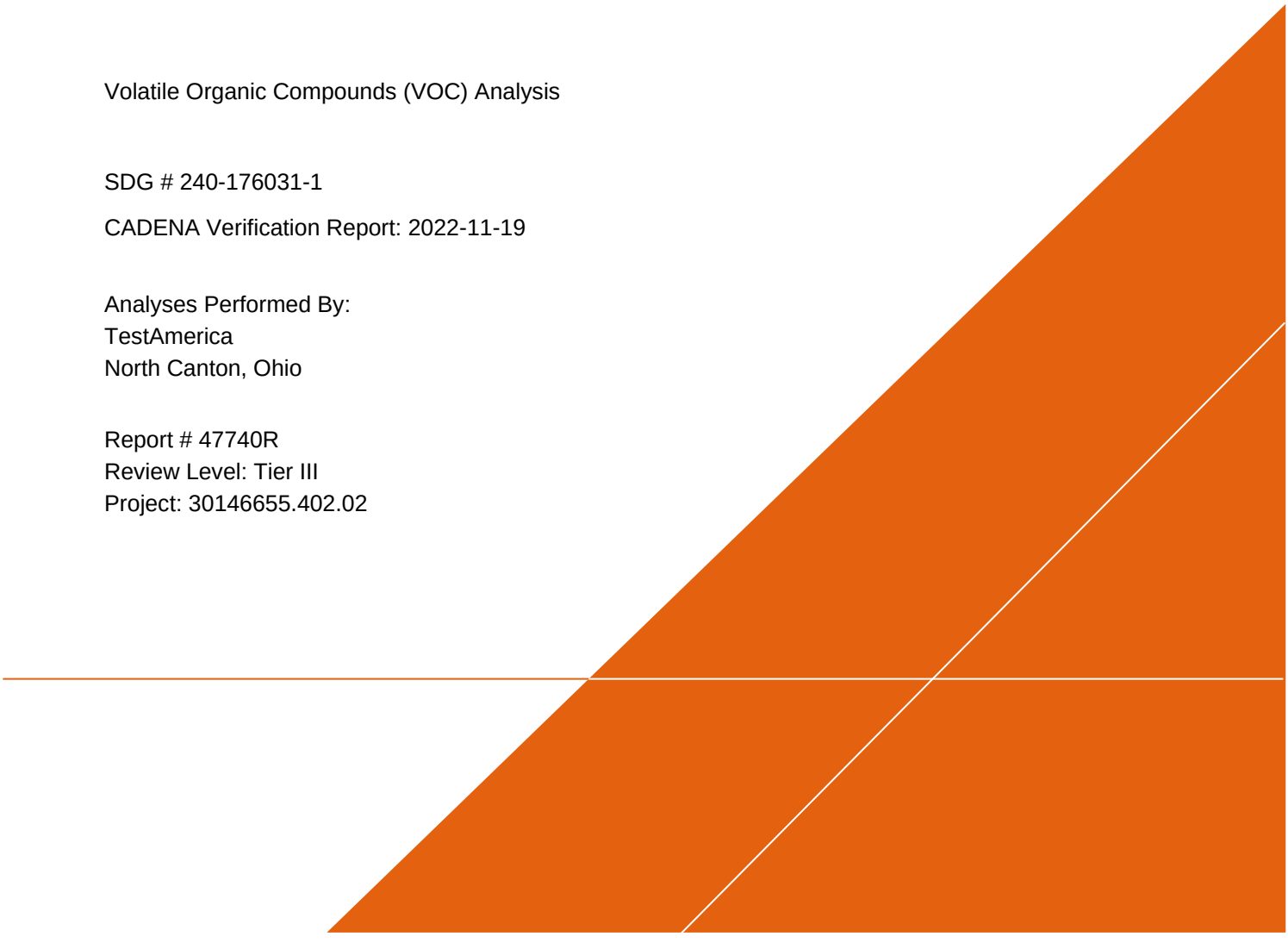
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176031-1

CADENA Verification Report: 2022-11-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47740R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176031-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_42	240-176031-1	Water	11/04/22		X	
MW-164S_110422	240-176031-2	Water	11/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_42 MW-164S_110422	Continuous Calibration Verification %D	1,1-Dichloroethene	+20.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 29, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_42	11/4/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1645_110422	11/4/22	1300		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176031 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34637 BEACON ST.

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time
SAM SUKARIA	ARCADIS	11/4/22 / 1407	ARCADIS COLD STORE.	ARCADIS	11/4/22 1407
Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time
	ARCADIS	11/7/22 / 1000		EETA	11/7/22 / 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/7/22 1002	Mandaly Block	eetmc	11-8-22 10:50

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11/18/2022
8:13 AM

Client Sample ID: TRIP BLANK_42
Lab Sample ID: 240-176031-1
Date Collected: 11/04/22 00:00
Matrix: Water
Date Received: 11/08/22 17:25

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 16:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 16:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 16:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 16:18*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/15/22 16:18*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 16:18*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/15/22 16:18*	*1*

Client Sample ID: MW-164S_110422
Lab Sample ID: 240-176031-2
Date Collected: 11/04/22 13:00
Matrix: Water
Date Received: 11/08/22 17:25

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 01:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/15/22 01:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 21:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 21:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 21:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 21:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/15/22 21:46*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/15/22 21:46*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/15/22 21:46*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 21:46*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:56:43 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176077-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176077-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176077-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following samples was outside the upper control limit: MW-153S_110722 (240-176077-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176077-1	TRIP BLANK_117	Water	11/07/22 00:00	11/09/22 09:45
240-176077-2	MW-153S_110722	Water	11/07/22 12:20	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Client Sample ID: TRIP BLANK_117 — Lab Sample ID: 240-176077-1

No Detections.

Client Sample ID: MW-153S_110722 — Lab Sample ID: 240-176077-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Client Sample ID: TRIP BLANK_117
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176077-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/16/22 14:46*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 14:46*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/16/22 14:46*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 14:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Client Sample ID: MW-153S_110722
Date Collected: 11/07/22 12:20
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176077-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*		*11/15/22 16:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 18:45*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/16/22 18:45*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 18:45*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/16/22 18:45*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176069-C-2 MS	Matrix Spike	86	92	99	92
240-176069-F-2 MSD	Matrix Spike Duplicate	85	90	99	93
240-176077-1	TRIP BLANK_117	89	90	96	102
240-176077-2	MW-153S_110722	94	91	100	103
LCS 240-552229/5	Lab Control Sample	84	92	100	93
MB 240-552229/8	Method Blank	90	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176077-2	MW-153S_110722	121 S1+
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 13:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 13:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 13:35*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 13:35*	*1*

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	26.0		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-F-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176077-2	MW-153S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176077-1	TRIP BLANK_117	Total/NA	Water	8260D	
240-176077-2	MW-153S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176069-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Client Sample ID: TRIP BLANK_117

Lab Sample ID: 240-176077-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 14:46

Client Sample ID: MW-153S_110722

Lab Sample ID: 240-176077-2

Date Collected: 11/07/22 12:20

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 18:45
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 16:27

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176077-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 117	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-153S_ 110722	11/7/22			6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176077 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 31644 BEACON ST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
SAM SUKARIA	ARCADIS	11/7/22 1530	NOVI COLD STORAGE	ARCADIS	11/7/22 1530
	ARCADIS	11/8/22 0915		EE-TA	11/8/22 0915
	EE-TA	11-8-22 943		EE TAC	11-9-22 945

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176077
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-9-22 Opened on 11-9-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? IR	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286777
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # done	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

no sample times on coc.
Sampling time logged from bottles: 1220. Time 11-9-22

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 176077

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/22/2022 7:56:43 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176077-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC sample -002 surrogate recovery outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176077-1

		Sample Name:	TRIP BLANK_117				MW-153S_110722			
		Lab Sample ID:	2401760771				2401760772			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

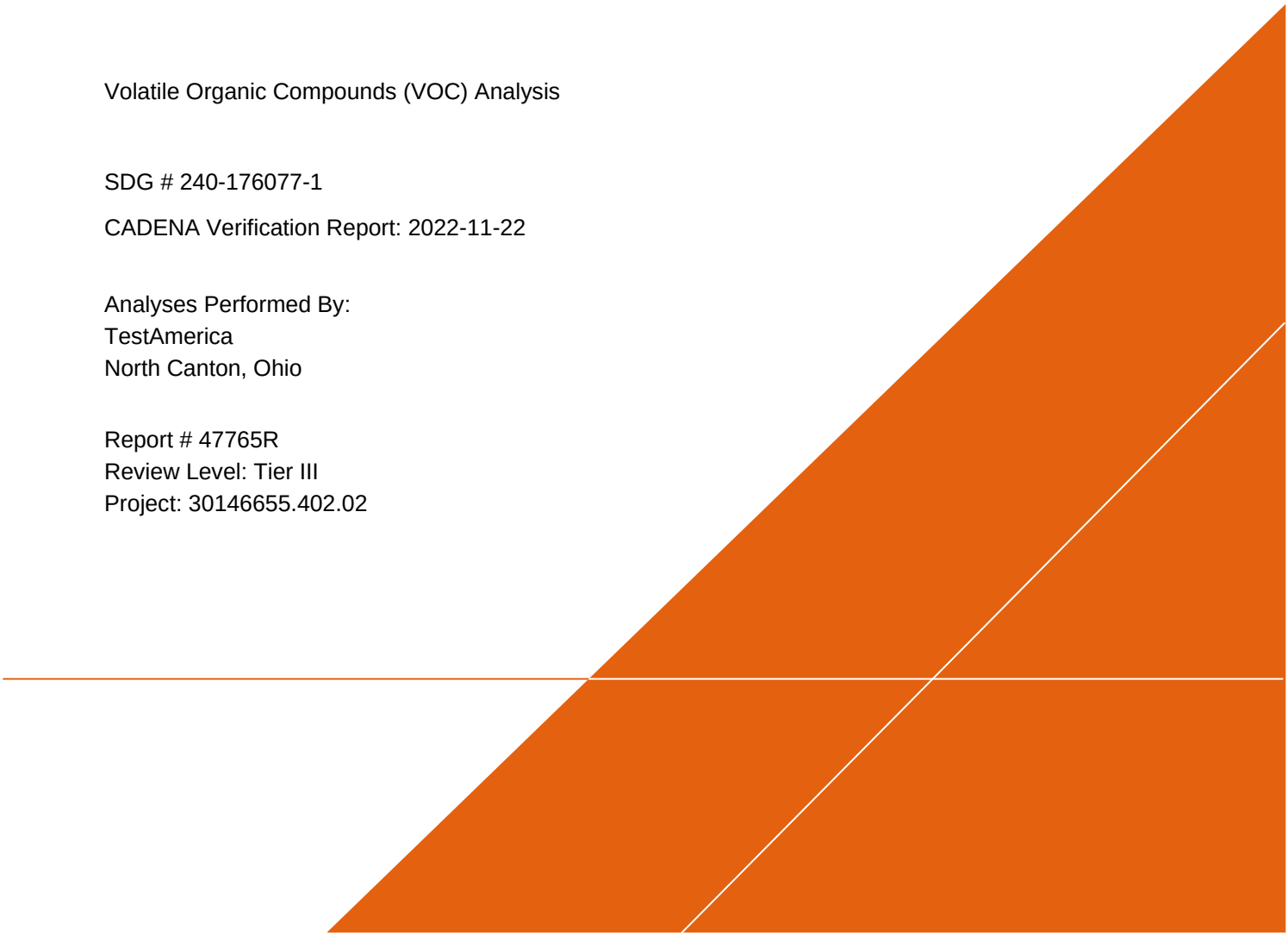
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176077-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47765R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176077-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_117	240-176077-1	Water	11/07/22		X	
MW-153S_110722	240-176077-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 05, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 06, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_ 117	11/7/22	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-1535_ 110722	11/7/22			6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: 31644 BEACON ST
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
SAM SUKARIA	ARCADIS	11/7/22 1530	NOVI COLD STORAGE	ARCADIS	11/7/22 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	11/8/22 0915	[signature]	EE TA	11/8/22 0915
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EE TA	11-8-22 943	[signature]	EE TAC	11-9-22 945

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11/22/2022
7:56 AM

Client Sample ID: TRIP BLANK_117
Lab Sample ID: 240-176077-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/16/22 14:46*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 14:46*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/16/22 14:46*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 14:46*	*1*

Client Sample ID: MW-153S_110722
Lab Sample ID: 240-176077-2
Date Collected: 11/07/22 12:20
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*		*11/15/22 16:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 18:45*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/16/22 18:45*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 18:45*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/16/22 18:45*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:58:21 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176079-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176079-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176079-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176079-1	TRIP BLANK_54	Water	11/07/22 00:00	11/09/22 09:45
240-176079-2	MW-154S_110722	Water	11/07/22 10:40	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Client Sample ID: TRIP BLANK_54 — Lab Sample ID: 240-176079-1

No Detections.

Client Sample ID: MW-154S_110722 — Lab Sample ID: 240-176079-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Client Sample ID: TRIP BLANK_54

Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176079-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/16/22 15:34*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/16/22 15:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/16/22 15:34*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 15:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Client Sample ID: MW-154S_110722
Date Collected: 11/07/22 10:40
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176079-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/15/22 17:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/22 19:33*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/22 19:33*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 19:33*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/16/22 19:33*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176069-C-2 MS	Matrix Spike	86	92	99	92
240-176069-F-2 MSD	Matrix Spike Duplicate	85	90	99	93
240-176079-1	TRIP BLANK_54	92	89	97	100
240-176079-2	MW-154S_110722	95	94	98	104
LCS 240-552229/5	Lab Control Sample	84	92	100	93
MB 240-552229/8	Method Blank	90	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176079-2	MW-154S_110722	119
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 13:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 13:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 13:35*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 13:35*	*1*

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	26.0		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-F-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176079-2	MW-154S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176079-1	TRIP BLANK_54	Total/NA	Water	8260D	
240-176079-2	MW-154S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176069-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Client Sample ID: TRIP BLANK_54

Lab Sample ID: 240-176079-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 15:34

Client Sample ID: MW-154S_110722

Lab Sample ID: 240-176079-2

Date Collected: 11/07/22 10:40

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 19:33
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 17:15

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176079-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Sampler Name: SAM SUKARIA			Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_54	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-154S_110722	11/7/22	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176079 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34682 BEACON ST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
SAM SUKARIA	ARCADIS	11/7/22 1530	ARCADIS COLD STOR.	ARCADIS	11/7/22 1530
	ARCADIS	11/8/22 0915		EE TA	11/8/22 0915
Jei Hall	EETA	11-8-22 943	Received in Laboratory by:	BETPC	11-9-22 945

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176079
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.9.22 Opened on 11.9.22

Cooler unpacked by: Danny Rojas

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC28677
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 176079

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176079-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176079-1

		Sample Name:	TRIP BLANK_54				MW-154S_110722			
		Lab Sample ID:	2401760791				2401760792			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

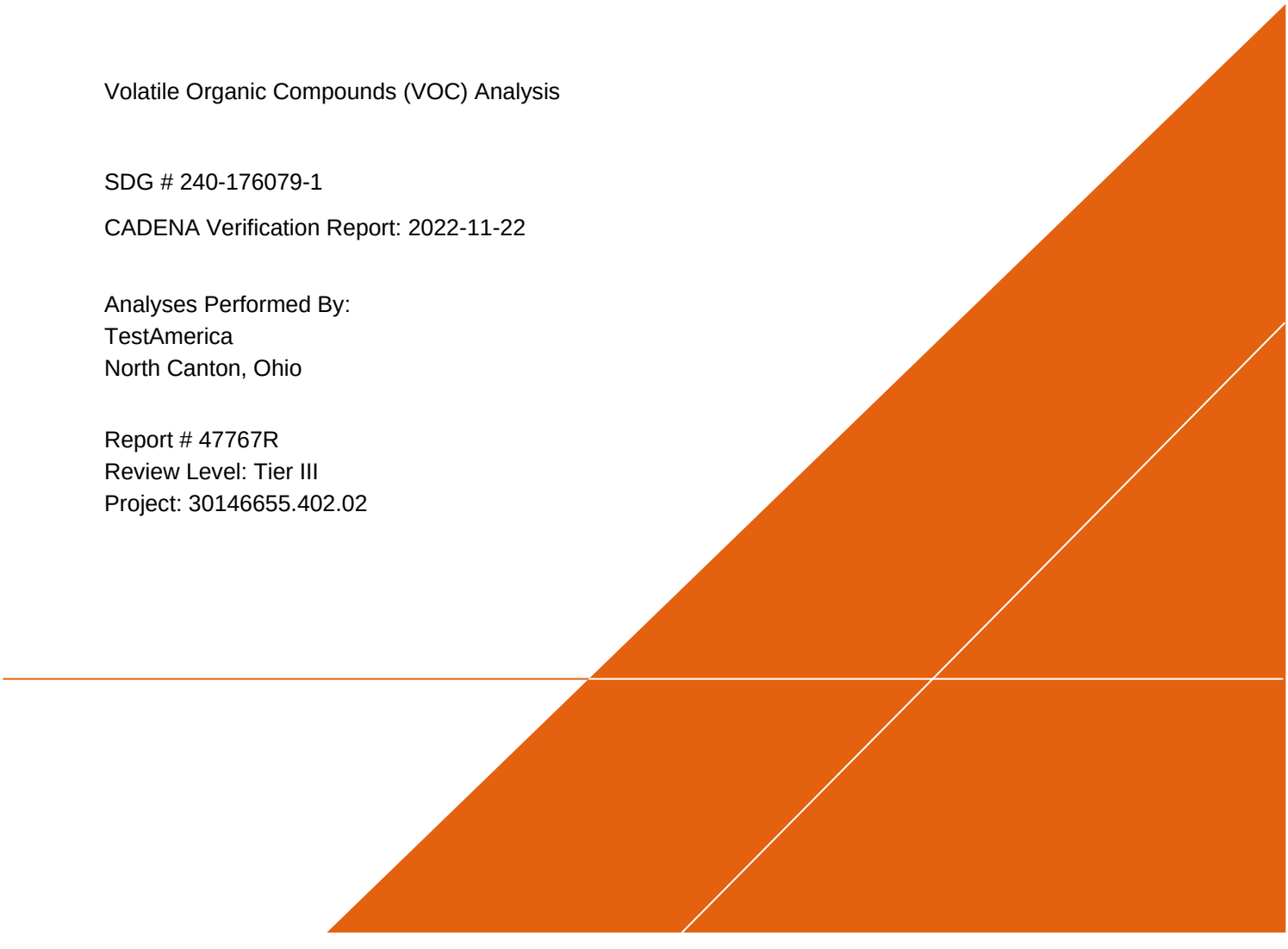
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176079-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47767R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176079-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_54	240-176079-1	Water	11/07/22		X	
MW-154S_110722	240-176079-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 05, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 06, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: SAM SUKARIA	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client / Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_54	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1545_110722	11/7/22	1040		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176079 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34682 BEACON ST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
SAM SUKARIA	ARCADIS	11/7/22 1530	ARCADIS COLD STOR.	ARCADIS	11/7/22 1530
	ARCADIS	11/8/22 0915		EETA	11/8/22 0915
Jei Hall	EETA	11-8-22 943	Received in Laboratory by:	BETMC	11-9-22 945

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11/22/2022 7:58 AM

Client Sample ID: TRIP BLANK_54
Lab Sample ID: 240-176079-1

Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/16/22 15:34*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/16/22 15:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/16/22 15:34*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 15:34*	*1*

Client Sample ID: MW-154S_110722
Lab Sample ID: 240-176079-2

Date Collected: 11/07/22 10:40
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/15/22 17:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/22 19:33*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/22 19:33*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 19:33*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/16/22 19:33*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/6/2022 2:27:42 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176836-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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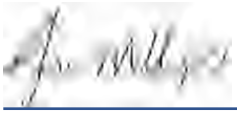
Authorization



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12/6/2022 2:27:42 PM

Authorized for release by
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Designee for
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176836-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176836-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176836-1	TRIP BLANK_180	Water	11/17/22 00:00	11/19/22 08:00
240-176836-2	MW-182S_111722	Water	11/17/22 11:20	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Client Sample ID: TRIP BLANK_180 — Lab Sample ID: 240-176836-1

No Detections.

Client Sample ID: MW-182S_111722 — Lab Sample ID: 240-176836-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Client Sample ID: TRIP BLANK_180
Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176836-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 23:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 23:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 23:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/28/22 23:18*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/28/22 23:18*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 23:18*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/28/22 23:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Client Sample ID: MW-182S_111722
Date Collected: 11/17/22 11:20
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176836-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 20:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 02:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 02:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 02:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 02:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 02:40*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 02:40*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 02:40*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 02:40*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176836-1	TRIP BLANK_180	92	100	104	98
240-176836-2	MW-182S_111722	92	99	103	99
240-176837-F-2 MS	Matrix Spike	83	100	105	97
240-176837-F-2 MSD	Matrix Spike Duplicate	83	100	104	97
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176836-2	MW-182S_111722	102
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176836-2	MW-182S_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176836-1	TRIP BLANK_180	Total/NA	Water	8260D	
240-176836-2	MW-182S_111722	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176837-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Client Sample ID: TRIP BLANK_180

Lab Sample ID: 240-176836-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/28/22 23:18

Client Sample ID: MW-182S_111722

Lab Sample ID: 240-176836-2

Date Collected: 11/17/22 11:20

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 02:40
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 20:56

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_180		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-182S_111722	11/17/22	11:20		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176836 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34766 standish st
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/17/22 16:10	NDV1 cold storage	Arcadis	11/17/22 16:10
	ARCADIS	11/18/22 0945		EE+A	11/18/22 0945
J. Hall	EE+A	11-18-22 1002	Received in Laboratory by:	EEC	11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176836
Barberton Facility

Client ARCADIS Site Name

Cooler unpacked by: M. A. A.

Cooler Received on 11/19/22 Opened on 11/19/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-21-22

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176836-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176836-1

		Sample Name:	TRIP BLANK_180				MW-182S_111722			
		Lab Sample ID:	2401768361				2401768362			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

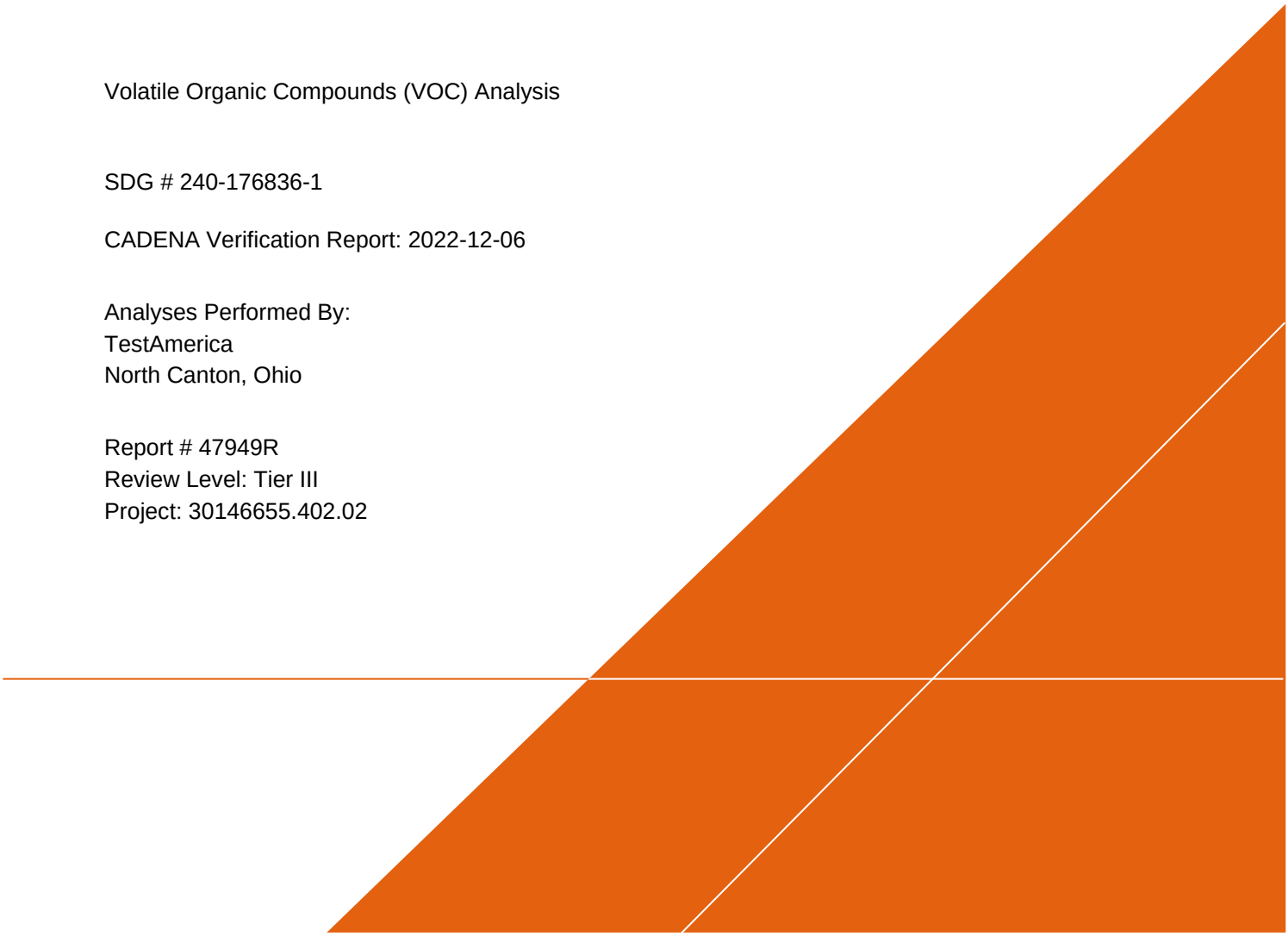
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176836-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47949R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176836-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_180	240-176836-1	Water	11/17/22		X	
MW-182S_111722	240-176836-2	Water	11/17/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_180 MW-182S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Initial / Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Initial / Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 15, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_180		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-182S_111722	11/17/22	11:20		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176836 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34766 standish st
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/17/22 16:10	NDV1 cold storage	Arcadis	11/17/22 16:10
[signature]	ARCADIS	11/18/22 0945	[signature]	EE&A	11/18/22 0945
J. Hall	EE&A	11-18-22 1002	Received in Laboratory by: [signature]	EEC	11/19/22 8:00

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12/6/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Client Sample ID: TRIP BLANK_180
Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176836-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 23:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 23:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 23:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/28/22 23:18*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/28/22 23:18*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 23:18*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/28/22 23:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176836-1

Client Sample ID: MW-182S_111722
Date Collected: 11/17/22 11:20
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176836-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 20:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 02:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 02:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 02:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 02:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 02:40*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 02:40*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 02:40*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 02:40*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:52:56 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176070-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Job ID: 240-176070-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176070-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176070-1	TRIP BLANK_137	Water	11/07/22 00:00	11/09/22 09:45
240-176070-2	MW-110S_110722	Water	11/07/22 13:20	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Client Sample ID: TRIP BLANK_137 — Lab Sample ID: 240-176070-1

No Detections.

Client Sample ID: MW-110S_110722 — Lab Sample ID: 240-176070-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Client Sample ID: TRIP BLANK_137
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176070-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/16/22 13:58*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/22 13:58*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 13:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 13:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Client Sample ID: MW-110S_110722
Date Collected: 11/07/22 13:20
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176070-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*66 - 120*		*11/15/22 15:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 17:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 17:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 17:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 17:57*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 17:57*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 17:57*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/16/22 17:57*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176069-C-2 MS	Matrix Spike	86	92	99	92
240-176069-F-2 MSD	Matrix Spike Duplicate	85	90	99	93
240-176070-1	TRIP BLANK_137	92	95	100	101
240-176070-2	MW-110S_110722	94	93	100	103
LCS 240-552229/5	Lab Control Sample	84	92	100	93
MB 240-552229/8	Method Blank	90	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176070-2	MW-110S_110722	115
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 13:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 13:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 13:35*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 13:35*	*1*

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	26.0		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-F-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176070-2	MW-110S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176070-1	TRIP BLANK_137	Total/NA	Water	8260D	
240-176070-2	MW-110S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176069-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Client Sample ID: TRIP BLANK_137

Lab Sample ID: 240-176070-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 13:58

Client Sample ID: MW-110S_110722

Lab Sample ID: 240-176070-2

Date Collected: 11/07/22 13:20

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 17:57
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 15:38

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176070-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW NPDES RCRA Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Samantha Szperichler	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240		Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
4 TRIP BLANK_137	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
6 MW-110S_110722	11/7/22	13:20		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176070 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34850 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis	11/7/22 16:10	Received by: No VOC cold storage	Arcadis	11/7/22 16:10
Relinquished by:	ARCADIS	11/8/22 0915	Received by:	EE-TA	11/8/22 0915
Relinquished by:	EE-TA	11-8-22 943	Received in Laboratory by:	EE-TOC	11-9-22 945

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176070
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-9-22 Opened on 11-9-22

Cooler unpacked by: Danny Rogers

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt — See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? — Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? — Yes No
11. Sufficient quantity received to perform indicated analyses? — Yes No
12. Are these work share samples and all listed on the COC? — Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# HC286777
14. Were VOAs on the COC? — Yes No
15. Were air bubbles >6 mm in any VOA vials? ● = Larger than this. — Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none — Yes No
17. Was a LL Hg or Me Hg trip blank present? — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 176070

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/22/2022 7:52:56 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176070-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176070-1

		Sample Name:	TRIP BLANK_137				MW-110S_110722			
		Lab Sample ID:	2401760701				2401760702			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

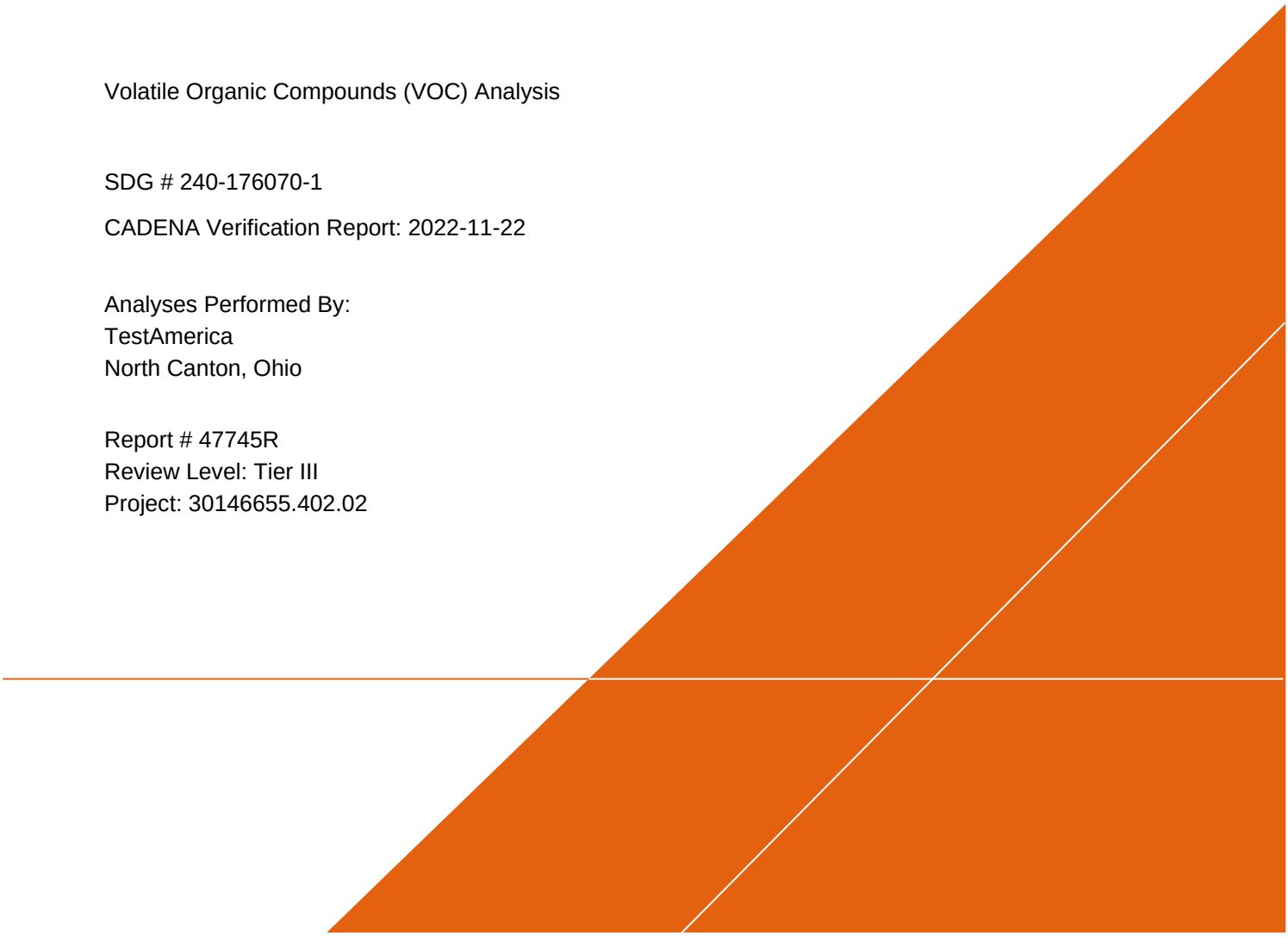
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176070-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47745R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176070-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_137	240-176070-1	Water	11/07/22		X	
MW-110S_110722	240-176070-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 30, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpirchler	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 137	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-110S_110722	11/7/22	13:20		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176070 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34850 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis	11/7/22 16:10	Received by: NOVI cold storage	Arcadis	11/7/22 16:10
Relinquished by:	ARCADIS	11/8/22 0915	Received by:	EE-TA	11/8/22 0915
Relinquished by:	EE-TA	11-8-22 943	Received in Laboratory by:	EE-TA	11-9-22 945

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Client Sample ID: TRIP BLANK_137
Lab Sample ID: 240-176070-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/16/22 13:58*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/22 13:58*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 13:58*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 13:58*	*1*

Client Sample ID: MW-110S_110722
Lab Sample ID: 240-176070-2
Date Collected: 11/07/22 13:20
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*66 - 120*		*11/15/22 15:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 17:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 17:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 17:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 17:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 17:57*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 17:57*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 17:57*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/16/22 17:57*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:19:02 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176622-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/2/2022 8:19:02 AM

Authorized for release by
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Job ID: 240-176622-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176622-1

Comments
No additional comments.

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 1.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176622-1	TRIP BLANK_216	Water	11/15/22 00:00	11/17/22 08:00
240-176622-2	MW-116S_111522	Water	11/15/22 11:32	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Client Sample ID: TRIP BLANK_216 — Lab Sample ID: 240-176622-1

No Detections.

Client Sample ID: MW-116S_111522 — Lab Sample ID: 240-176622-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Client Sample ID: TRIP BLANK_216

Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176622-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 14:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 14:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 14:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 14:44*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 14:44*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/25/22 14:44*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/25/22 14:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Client Sample ID: MW-116S_111522
Date Collected: 11/15/22 11:32
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176622-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/23/22 15:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 18:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 18:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 18:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/25/22 18:55*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/25/22 18:55*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/25/22 18:55*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/25/22 18:55*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176621-A-2 MS	Matrix Spike	84	95	95	84
240-176621-D-2 MSD	Matrix Spike Duplicate	85	94	96	85
240-176622-1	TRIP BLANK_216	97	77	92	93
240-176622-2	MW-116S_111522	100	76	94	96
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176555-B-1 MS	Matrix Spike	77
240-176555-B-1 MSD	Matrix Spike Duplicate	81
240-176622-2	MW-116S_111522	76
LCS 240-553221/3	Lab Control Sample	76
MB 240-553221/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-D-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553221/4
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 06:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/23/22 06:09*	*1*

Lab Sample ID: LCS 240-553221/3
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.27		ug/L		93	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176555-B-1 MS
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	14		10.0	26.1		ug/L		116	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: 240-176555-B-1 MSD
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	14		10.0	27.3		ug/L		128	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

GC/MS VOA

Analysis Batch: 553221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176622-2	MW-116S_111522	Total/NA	Water	8260D SIM	
MB 240-553221/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553221/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176555-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176555-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176622-1	TRIP BLANK_216	Total/NA	Water	8260D	
240-176622-2	MW-116S_111522	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176621-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Client Sample ID: TRIP BLANK_216

Lab Sample ID: 240-176622-1

Date Collected: 11/15/22 00:00

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 14:44

Client Sample ID: MW-116S_111522

Lab Sample ID: 240-176622-2

Date Collected: 11/15/22 11:32

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 18:55
Total/NA	Analysis	8260D SIM		1	553221	CS	EET CAN	11/23/22 15:52

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehiia Ferrem	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_216	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-116S_111522	11/15/22	11:32		6						6					N	G	X	X	X	X	X	X		3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176622 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34851 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Lehiia Ferrem	Arcadis	11/15/22 15:25	Pan Gold Jhangi	~~Arcadis~~	11/15/22 15:25
	Company: ARCADIS	Date/Time: 11/16/22 1035	Received by:	Company: EETA	Date/Time: 11/16/22 1035
	Company: EETA	Date/Time: 11/16/22 10:40	Received in Laboratory by: Rachelle Manalo	Company: EETMC	Date/Time: 11-1722 800

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176622
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-17-22 Opened on 11-17-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 14 ~~Foam Box~~ Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes (No)
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No (NA)
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y N), # of containers (Y N), and sample type of grab/comp (Y N)	11-17-22
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #0104201G	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176622

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

December 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176622-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176622-1

		Sample Name:	TRIP BLANK_216				MW-116S_111522			
		Lab Sample ID:	2401766221				2401766222			
		Sample Date:	11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176622-1

CADENA Verification Report: 2022-12-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47934R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176622-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_216	240-176622-1	Water	11/15/2022		X	
MW-116S_111522	240-176622-2	Water	11/15/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 16, 2022

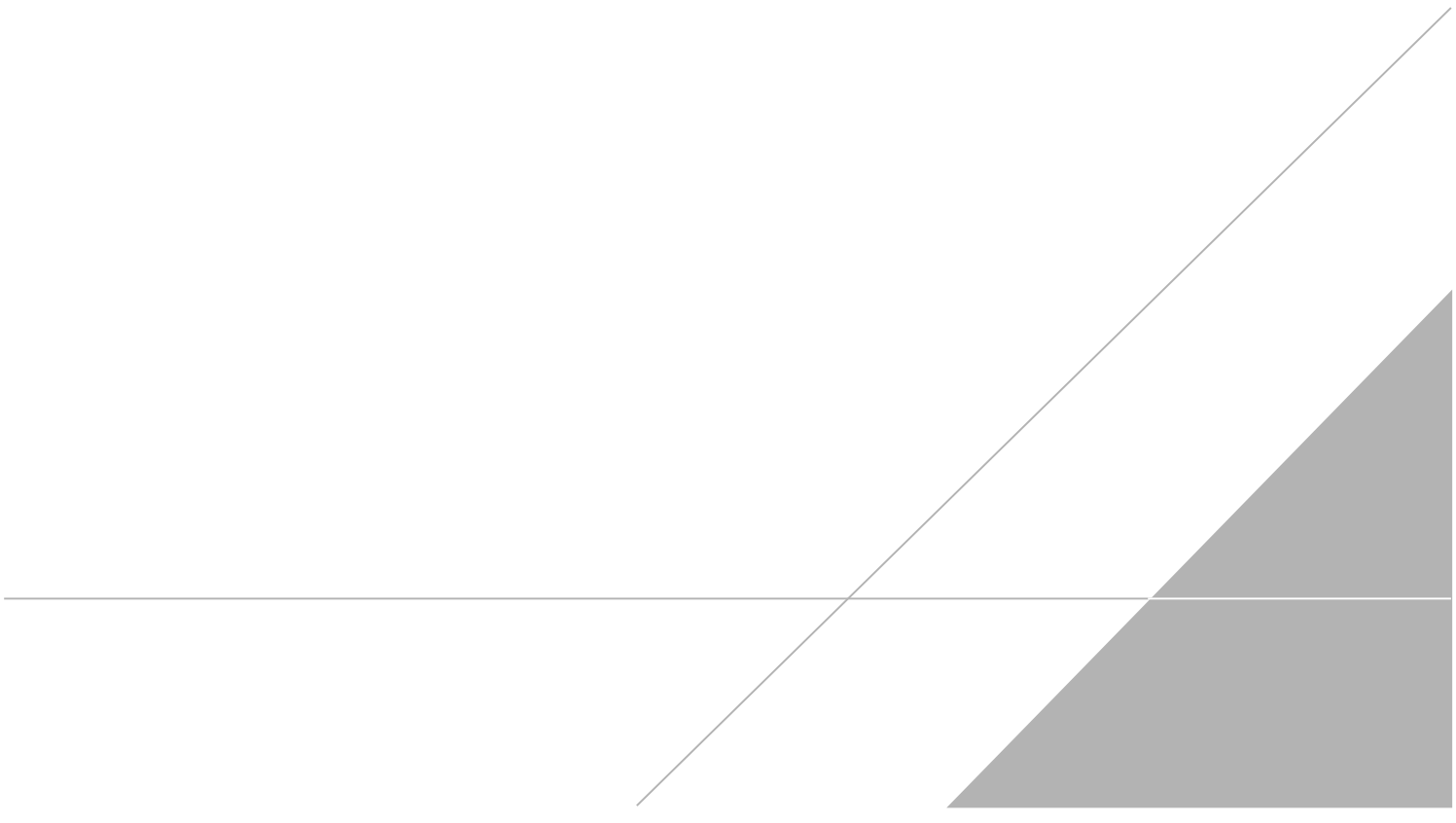
PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehila Ferem	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_216	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-116S_111522	11/15/22	11:32		6						6					N	G	X	X	X	X	X	X		3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176622 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34851 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Lehila Ferem	Arcadis	11/15/22 15:25	Pan Gold Jhangi	~~Arcadis~~	11/15/22 15:25
	ARCADIS	11/16/22 1035		EETA	11/16/22 1035
	EETA	11/16/22 10:40	Received in Laboratory by: Rachelle Manalo	EETNC	11-1722 800

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Client Sample ID: TRIP BLANK_216

Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176622-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 14:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 14:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 14:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 14:44*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 14:44*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/25/22 14:44*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/25/22 14:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176622-1

Client Sample ID: MW-116S_111522
Date Collected: 11/15/22 11:32
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176622-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/23/22 15:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 18:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 18:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 18:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/25/22 18:55*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/25/22 18:55*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/25/22 18:55*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/25/22 18:55*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 10:05:14 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176626-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/2/2022 10:05:14 AM

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Designee for
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Job ID: 240-176626-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176626-1

Comments
No additional comments.

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 1.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176626-1	TRIP BLANK_212	Water	11/15/22 00:00	11/17/22 08:00
240-176626-2	MW-179S_111522	Water	11/15/22 09:51	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Client Sample ID: TRIP BLANK_212 — Lab Sample ID: 240-176626-1

No Detections.

Client Sample ID: MW-179S_111522 — Lab Sample ID: 240-176626-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Client Sample ID: TRIP BLANK_212
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176626-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 16:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 16:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 16:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 16:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 16:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/25/22 16:24*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/25/22 16:24*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/25/22 16:24*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 16:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Client Sample ID: MW-179S_111522
Date Collected: 11/15/22 09:51
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176626-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/27/22 23:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 20:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 20:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 20:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 20:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/25/22 20:35*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 20:35*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/25/22 20:35*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/25/22 20:35*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176621-A-2 MS	Matrix Spike	84	95	95	84
240-176621-D-2 MSD	Matrix Spike Duplicate	85	94	96	85
240-176626-1	TRIP BLANK_212	99	76	93	95
240-176626-2	MW-179S_111522	103	75	94	101
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176626-2	MW-179S_111522	81
240-176634-I-5 MS	Matrix Spike	80
240-176634-O-5 MSD	Matrix Spike Duplicate	80
LCS 240-553480/3	Lab Control Sample	76
MB 240-553480/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-D-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553480/4
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553480/3
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176634-I-5 MS
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176634-O-5 MSD
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

GC/MS VOA

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176626-1	TRIP BLANK_212	Total/NA	Water	8260D	
240-176626-2	MW-179S_111522	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176621-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 553480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176626-2	MW-179S_111522	Total/NA	Water	8260D SIM	
MB 240-553480/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553480/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176634-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176634-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Client Sample ID: TRIP BLANK_212

Lab Sample ID: 240-176626-1

Date Collected: 11/15/22 00:00

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 16:24

Client Sample ID: MW-179S_111522

Lab Sample ID: 240-176626-2

Date Collected: 11/15/22 09:51

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 20:35
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/27/22 23:30

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lehicia Ferreira	TAT if different from below		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day ☑ 2 weeks ☐ 3 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_212	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
~~MW-116S-111522~~	"																							3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-179S-111522	11/15/22	09:51		6						6					N	G	X	X	X	X	X	X	X	

240-176626 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34870 Wadsworth
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehicia Ferreira	Arcadis	11/15/22 15:25	Voi cold Storage	Arcadis	11/15/22 15:25
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/16/22 1035		EETM	11/16/22 1035
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETM	11/16/22 1014	Rachelle Arreola	EETM	11-17-22 800

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 176626**
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-17-22 Opened on 11-17-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 14 ~~Foam Box~~ Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes (No)
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No (NA)
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y) N 11-17-22
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #010420IG	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176626

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

December 05, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176626-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-05
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176626-1

		Sample Name:	TRIP BLANK_212				MW-179S_111522			
		Lab Sample ID:	2401766261				2401766262			
		Sample Date:	11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

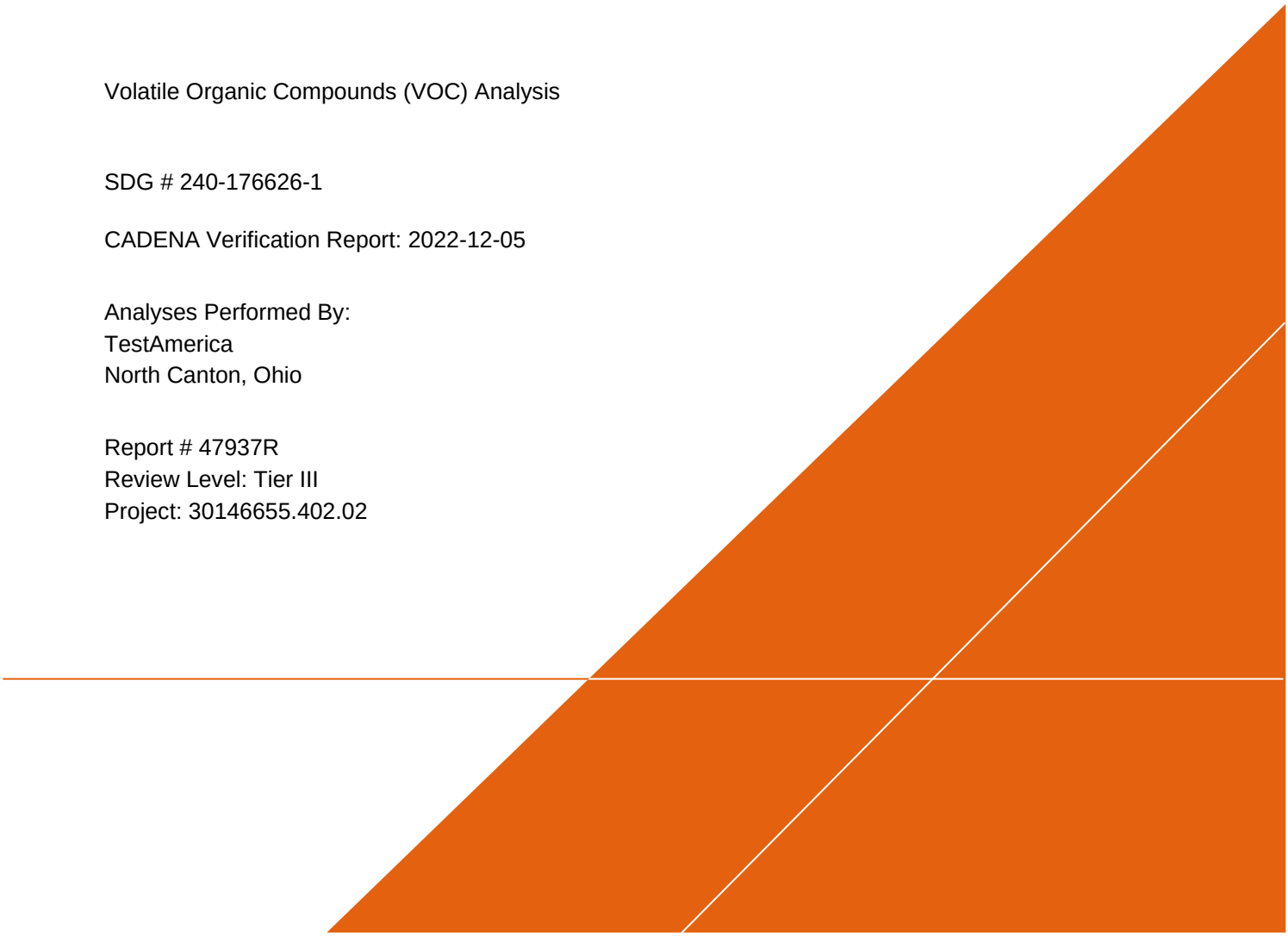
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176626-1

CADENA Verification Report: 2022-12-05

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47937R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176626-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_212	240-176626-1	Water	11/15/22		X	
MW-179S_111522	240-176626-2	Water	11/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Lehicia Ferreira	TAT if different from below		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day ☑ 2 weeks ☐ 3 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_212	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
~~MW-116S-111522~~	"																							3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-179S_111522	11/15/22	09:51		6						6					N	G	X	X	X	X	X	X	X	

240-176626 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34870 Wadsworth
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehicia Ferreira	Arcadis	11/15/22 15:25	Poi cold Storage	Arcadis	11/15/22 15:25
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	11/16/22 1035	[signature]	EETM	11/16/22 1035
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETM	11/16/22 1014	[signature]	EETM	11-17-22 800

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12/2/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Client Sample ID: TRIP BLANK_212
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176626-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 16:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 16:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 16:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 16:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 16:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/25/22 16:24*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/25/22 16:24*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/25/22 16:24*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 16:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176626-1

Client Sample ID: MW-179S_111522
Date Collected: 11/15/22 09:51
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176626-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/27/22 23:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 20:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 20:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 20:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 20:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/25/22 20:35*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 20:35*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/25/22 20:35*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/25/22 20:35*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 10:13:18 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176627-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Job ID: 240-176627-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176627-1

Comments
No additional comments.

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 1.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176627-1	TRIP BLANK_195	Water	11/15/22 00:00	11/17/22 08:00
240-176627-2	MW-180SR_111522	Water	11/15/22 15:10	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Client Sample ID: TRIP BLANK_195 — Lab Sample ID: 240-176627-1

No Detections.

Client Sample ID: MW-180SR_111522 — Lab Sample ID: 240-176627-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Client Sample ID: TRIP BLANK_195
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176627-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 15:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 15:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 15:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 15:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/25/22 15:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/25/22 15:34*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/25/22 15:34*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/25/22 15:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Client Sample ID: MW-180SR_111522
Date Collected: 11/15/22 15:10
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176627-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/27/22 23:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 19:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 19:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 19:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 19:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/25/22 19:45*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/25/22 19:45*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/25/22 19:45*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 19:45*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176621-A-2 MS	Matrix Spike	84	95	95	84
240-176621-D-2 MSD	Matrix Spike Duplicate	85	94	96	85
240-176627-1	TRIP BLANK_195	98	79	95	92
240-176627-2	MW-180SR_111522	99	72	90	95
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176627-2	MW-180SR_111522	80
240-176634-I-5 MS	Matrix Spike	80
240-176634-O-5 MSD	Matrix Spike Duplicate	80
LCS 240-553480/3	Lab Control Sample	76
MB 240-553480/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-D-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553480/4
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553480/3
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176634-I-5 MS
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176634-O-5 MSD
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

GC/MS VOA

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176627-1	TRIP BLANK_195	Total/NA	Water	8260D	
240-176627-2	MW-180SR_111522	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176621-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 553480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176627-2	MW-180SR_111522	Total/NA	Water	8260D SIM	
MB 240-553480/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553480/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176634-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176634-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Client Sample ID: TRIP BLANK_195

Lab Sample ID: 240-176627-1

Date Collected: 11/15/22 00:00

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 15:34

Client Sample ID: MW-180SR_111522

Lab Sample ID: 240-176627-2

Date Collected: 11/15/22 15:10

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 19:45
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/27/22 23:56

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_195	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-18DSR_11152	11/15/22	15:10		6						6					W	G	X	X	X	X	X	XX		3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34891 Wadsworth St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Samantha Szpaichler	Arcadis	11/15/22 16:10	Received by: NOVI cold storage	Arcadis	11/15/22 16:10
Relinquished by:	ARCADIS	11/16/22 1035	Received by:	EETA	11/16/22 1035
Relinquished by:	EETA	11/16/22 10:40	Received in Laboratory by:	EETN	11-17-22 800

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176627
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-17-22 Opened on 11-17-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 14 ~~Foam Box~~ Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes (No)
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No (NA)
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y N), # of containers (Y N), and sample type of grab/comp (Y N)	(Yes) No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042016	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-17-22 (Yes) (No) (NA)

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176627

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 05, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176627-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-05
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176627-1

		Sample Name:	TRIP BLANK_195				MW-180SR_111522			
		Lab Sample ID:	2401766271				2401766272			
		Sample Date:	11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

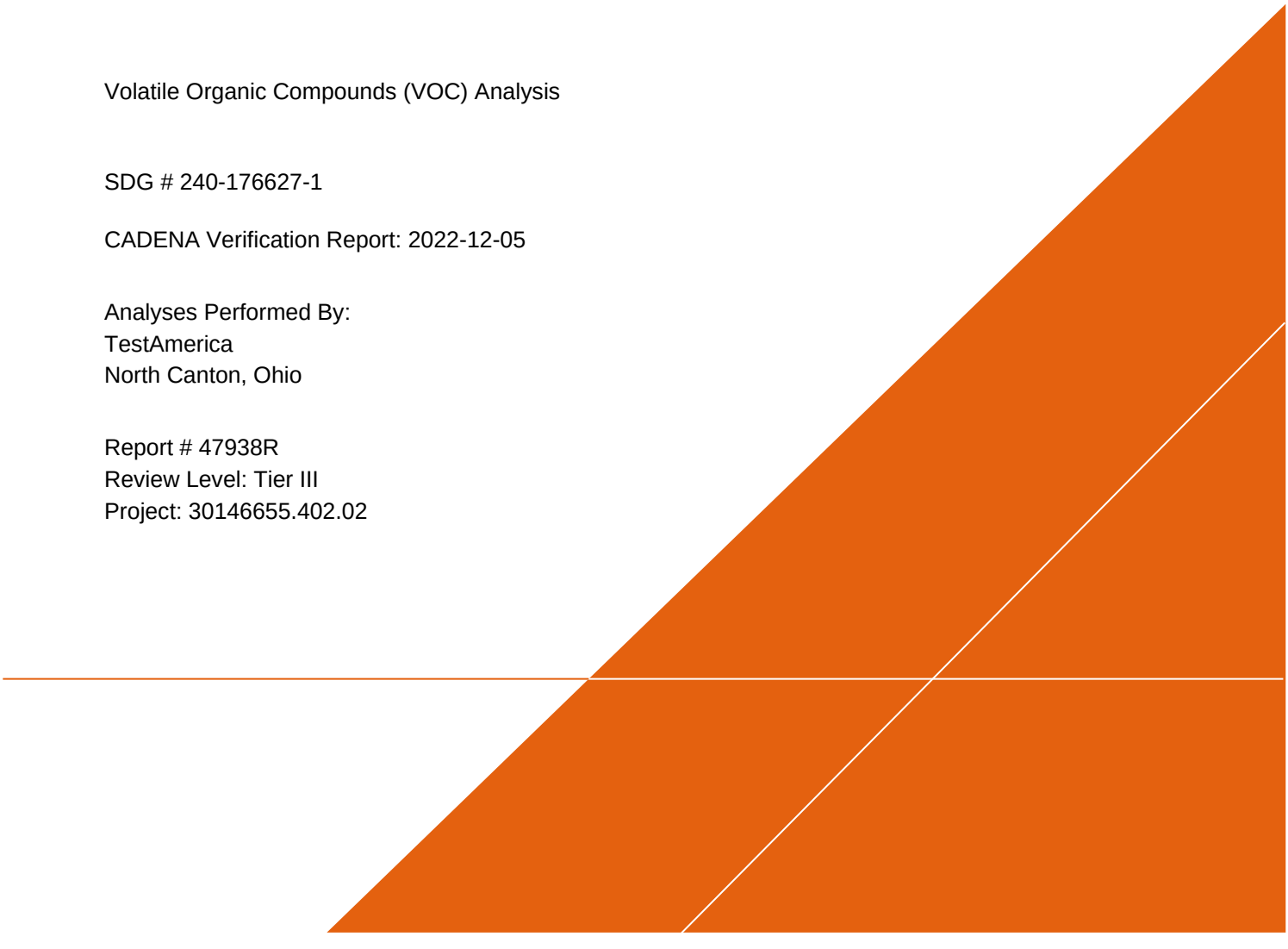
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176627-1

CADENA Verification Report: 2022-12-05

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47938R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176627-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_195	240-176627-1	Water	11/15/22		X	
MW-180SR_111522	240-176627-2	Water	11/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_195	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-18DSR_11152	11/15/22	15:10		6						6					W	G	X	X	X	X	X	XX		3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34891 Wadsworth St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by: Samantha Szpaichler	Arcadis	11/15/22 16:10	Received by: Novi cold storage	Arcadis	11/15/22 16:10
Relinquished by:	ARCADIS	11/16/22 1035	Received by:	EEtA	11/16/22 1035
Relinquished by:	EEtA	11/16/22 10:40	Received in Laboratory by:	EESTL	11-17-22 800

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Client Sample ID: TRIP BLANK_195
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176627-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 15:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 15:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 15:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 15:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/25/22 15:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/25/22 15:34*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/25/22 15:34*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/25/22 15:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176627-1

Client Sample ID: MW-180SR_111522
Date Collected: 11/15/22 15:10
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176627-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/27/22 23:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 19:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 19:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 19:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 19:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 19:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/25/22 19:45*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/25/22 19:45*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/25/22 19:45*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 19:45*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/6/2022 2:35:15 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176837-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

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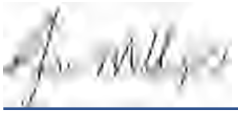

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176837-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176837-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176837-1	TRIP BLANK_179	Water	11/17/22 00:00	11/19/22 08:00
240-176837-2	MW-104S_111722	Water	11/17/22 12:35	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Client Sample ID: TRIP BLANK_179 — Lab Sample ID: 240-176837-1

No Detections.

Client Sample ID: MW-104S_111722 — Lab Sample ID: 240-176837-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Client Sample ID: TRIP BLANK_179

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176837-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 23:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 23:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 23:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 23:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/28/22 23:43*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/28/22 23:43*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/28/22 23:43*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/28/22 23:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Client Sample ID: MW-104S_111722
Date Collected: 11/17/22 12:35
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176837-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 21:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 03:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 03:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 03:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 03:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 03:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 03:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 03:06*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 03:06*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 03:06*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 03:06*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176837-1	TRIP BLANK_179	90	99	101	96
240-176837-2	MW-104S_111722	92	98	104	98
240-176837-2 MS	MW-104S_111722	83	100	105	97
240-176837-2 MSD	MW-104S_111722	83	100	104	97
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176837-2	MW-104S_111722	102
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4

Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3

Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-2 MS

Matrix: Water
Analysis Batch: 553655

Client Sample ID: MW-104S_111722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: MW-104S_111722
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: MW-104S_111722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176837-2	MW-104S_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176837-1	TRIP BLANK_179	Total/NA	Water	8260D	
240-176837-2	MW-104S_111722	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-2 MS	MW-104S_111722	Total/NA	Water	8260D	
240-176837-2 MSD	MW-104S_111722	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Client Sample ID: TRIP BLANK_179

Lab Sample ID: 240-176837-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/28/22 23:43

Client Sample ID: MW-104S_111722

Lab Sample ID: 240-176837-2

Date Collected: 11/17/22 12:35

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 03:06
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 21:21

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac) NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_179	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1045_111722	11/17/22	12:35		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176837 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34900 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis (EE 10:10)	11/17/22 16:10	Novi cold storage	Arcadis	11/17/22 16:10
	ARCADIS	11/18/22 0945		EE+A	11/18/22 0945
	EE+A	11/18/22 1002	Received in Laboratory by:	Company:	Date/Time: 11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176537
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. A. A.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 5 Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-21-22

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176837-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176837-1

		Sample Name:	TRIP BLANK_179				MW-104S_111722			
		Lab Sample ID:	2401768371				2401768372			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176837-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47914R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176837-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_179	240-176837-1	Water	11/17/2022		X	
MW-104S_111722	240-176837-2	Water	11/17/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_179 MW-104S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 12, 2022

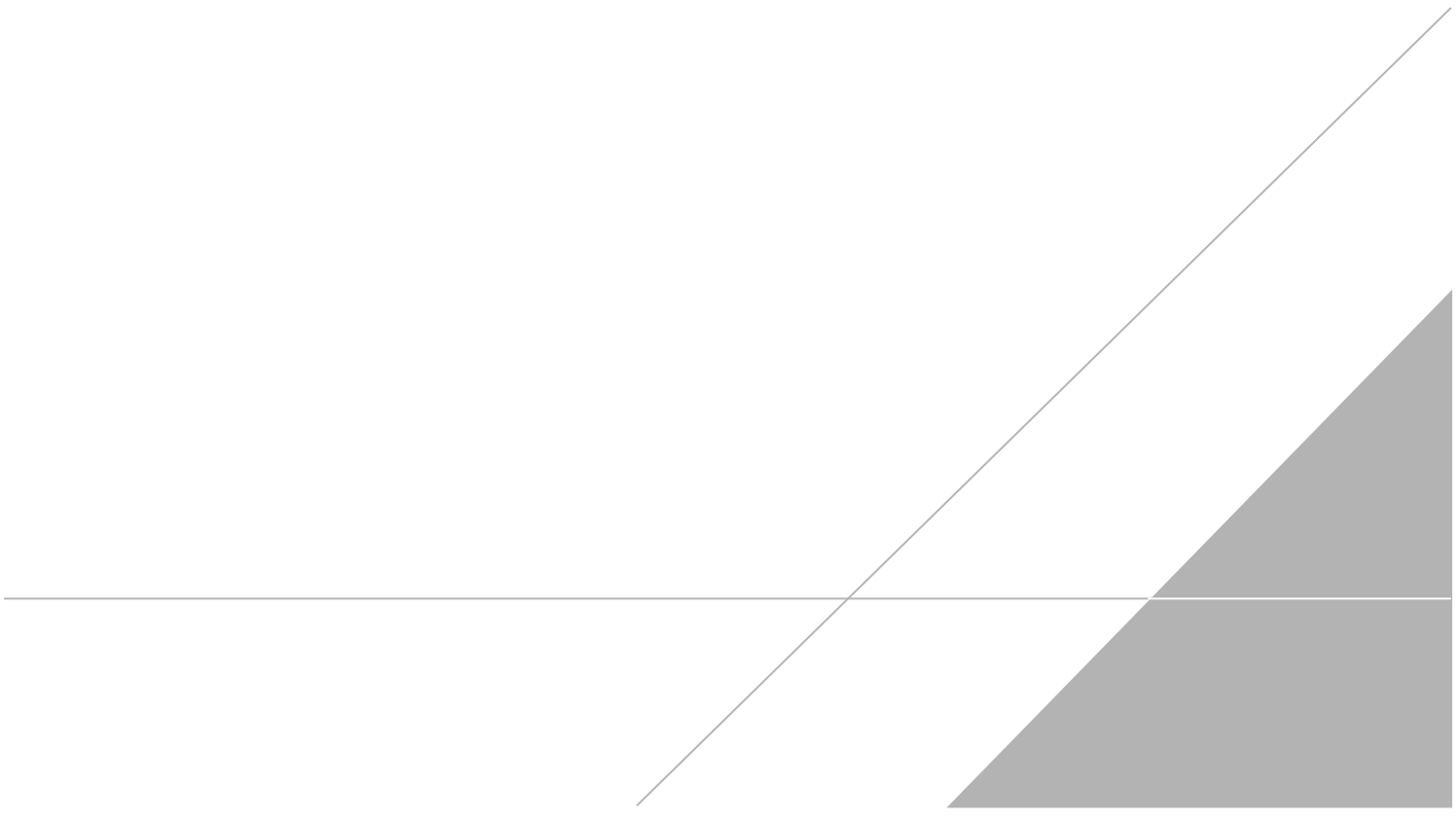
PEER REVIEW: Andrew Korycinski

DATE: December 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_179	11/18/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-104S_111722	11/17/22	12:35		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176837 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34900 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis (EE 10:10)	11/17/22 16:10	Novi cold storage	Arcadis	11/17/22 16:10
	ARCADIS	11/18/22 0945		EE+A	11/18/22 0945
	EE+A	11/18/22 1002	Received in Laboratory by:	Company:	Date/Time: 11/19/22 8:00

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12/6/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Client Sample ID: TRIP BLANK_179

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176837-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 23:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 23:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 23:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 23:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 23:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/28/22 23:43*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/28/22 23:43*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/28/22 23:43*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/28/22 23:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176837-1

Client Sample ID: MW-104S_111722
Date Collected: 11/17/22 12:35
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176837-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 21:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 03:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 03:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 03:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 03:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 03:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 03:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 03:06*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 03:06*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 03:06*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 03:06*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176841-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Eurofins Canton

Job Notes

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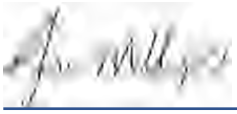
Authorization



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176841-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176841-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176841-1	TRIP BLANK_181	Water	11/17/22 00:00	11/19/22 08:00
240-176841-2	MW-159S_111722	Water	11/17/22 14:45	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Client Sample ID: TRIP BLANK_181 — Lab Sample ID: 240-176841-1

No Detections.

Client Sample ID: MW-159S_111722 — Lab Sample ID: 240-176841-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Client Sample ID: TRIP BLANK_181

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176841-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 08:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 08:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 08:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 08:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 08:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 08:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 08:10*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/29/22 08:10*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 08:10*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 08:10*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Client Sample ID: MW-159S_111722
Date Collected: 11/17/22 14:45
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176841-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 23:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/28/22 23:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 10:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 10:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 10:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 10:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 10:42*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 10:42*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/22 10:42*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 10:42*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176841-1	TRIP BLANK_181	91	101	103	99
240-176841-2	MW-159S_111722	91	98	102	97
240-176843-D-5 MS	Matrix Spike	85	99	104	99
240-176843-D-5 MSD	Matrix Spike Duplicate	83	98	104	96
LCS 240-553659/3	Lab Control Sample	84	101	105	97
MB 240-553659/4	Method Blank	91	99	101	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
240-176841-2	MW-159S_111722	106
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553659/4
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 06:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 06:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 06:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 06:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 06:53*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 06:53*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 06:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 06:53*	*1*

Lab Sample ID: LCS 240-553659/3
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		97	77 - 123
Tetrachloroethene	25.0	25.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	25.0	25.3		ug/L		101	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	28.4		ug/L		114	56 - 135
cis-1,2-Dichloroethene	4.8		25.0	32.9		ug/L		112	66 - 128
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131
trans-1,2-Dichloroethene	0.74	J	25.0	24.1		ug/L		93	56 - 136
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124
Vinyl chloride	5.4		25.0	32.1		ug/L		107	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176843-D-5 MSD
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	4	26
cis-1,2-Dichloroethene	4.8		25.0	31.3		ug/L		106	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131	2	20
trans-1,2-Dichloroethene	0.74	J	25.0	23.2		ug/L		90	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	2	15
Vinyl chloride	5.4		25.0	30.9		ug/L		102	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176841-2	MW-159S_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176841-1	TRIP BLANK_181	Total/NA	Water	8260D	
240-176841-2	MW-159S_111722	Total/NA	Water	8260D	
MB 240-553659/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553659/3	Lab Control Sample	Total/NA	Water	8260D	
240-176843-D-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-176843-D-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Client Sample ID: TRIP BLANK_181

Lab Sample ID: 240-176841-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 08:10

Client Sample ID: MW-159S_111722

Lab Sample ID: 240-176841-2

Date Collected: 11/17/22 14:45

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 10:42
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 23:47

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 150

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Jagielski	TAT if different from below: 10 day; ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 181	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-159S_111722	11/17/22	14:45		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176841 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34920 Beacon St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company: Arcadis (55 to 10)	Date/Time: 11/17/22 16:10	Received by: WWI cold storage	Company: Arcadis	Date/Time: 11/17/22 16:10
Relinquished by:	Company: ARCADIS	Date/Time: 11/18/22 0945	Received by:	Company: EETA	Date/Time: 11/18/22 0945
Relinquished by:	Company: EETA	Date/Time: 11/18/22 1002	Received in Laboratory by:	Company: EEC	Date/Time: 11/19/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176841
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. A. A.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-21-22

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176841-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176841-1

		Sample Name:	TRIP BLANK_181				MW-159S_111722			
		Lab Sample ID:	2401768411				2401768412			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176841-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47918R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176841-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_181	240-176841-1	Water	11/17/2022		X	
MW-159S_111722	240-176841-2	Water	11/17/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_181 MW-159S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 12, 2022

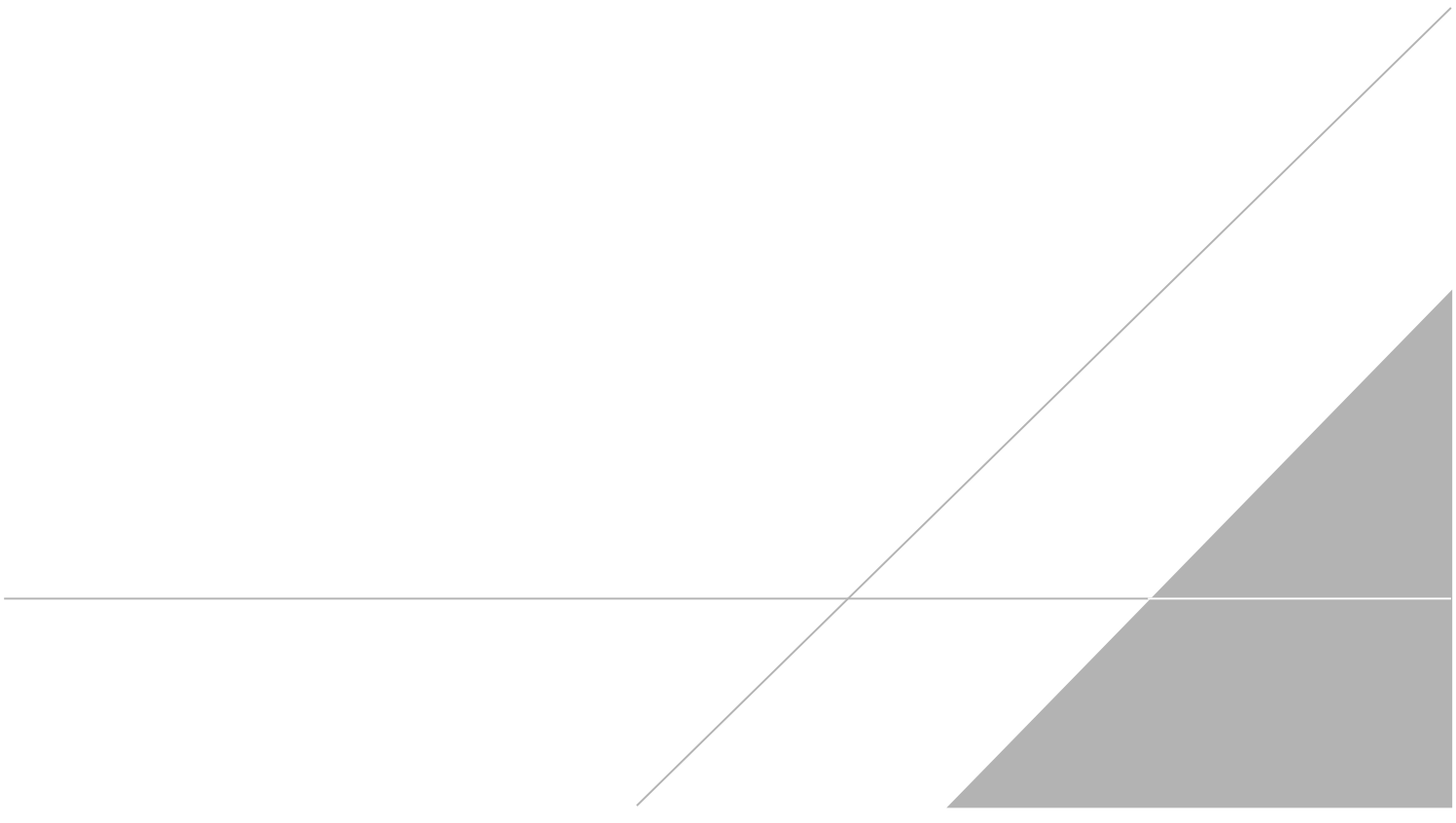
PEER REVIEW: Andrew Korycinski

DATE: December 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN 150

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Jagaciwier	TAT if different from below ☐		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ☑ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 181	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-159S_111722	11/17/22	14:45		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176841 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34920 Beacon St
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis (55 to 10)	11/17/22 16:10	Received by: WWH cold storage	Arcadis	11/17/22 16:10
Relinquished by:	ARCADIS	11/18/22 0945	Received by:	EETA	11/18/22 0945
Relinquished by:	EETA	11/18/22 1002	Received in Laboratory by:	EEC	11/19/22 8:00

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12/6/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Client Sample ID: TRIP BLANK_181

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176841-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 08:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 08:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 08:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 08:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 08:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 08:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 08:10*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/29/22 08:10*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 08:10*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 08:10*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176841-1

Client Sample ID: MW-159S_111722
Date Collected: 11/17/22 14:45
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176841-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 23:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/28/22 23:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 10:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 10:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 10:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 10:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 10:42*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 10:42*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/22 10:42*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 10:42*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/30/2022 3:48:23 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176713-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176713-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176713-1

Receipt
The samples were received on 11/18/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176713-1	TRIP BLANK_215	Water	11/16/22 00:00	11/18/22 08:00
240-176713-2	MW-185S_111622	Water	11/16/22 13:25	11/18/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Client Sample ID: TRIP BLANK_215 — Lab Sample ID: 240-176713-1

No Detections.

Client Sample ID: MW-185S_111622 — Lab Sample ID: 240-176713-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Client Sample ID: TRIP BLANK_215
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176713-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 19:04*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/28/22 19:04*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/28/22 19:04*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/28/22 19:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Client Sample ID: MW-185S_111622
Date Collected: 11/16/22 13:25
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176713-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/27/22 23:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 19:29*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/28/22 19:29*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/28/22 19:29*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/28/22 19:29*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176712-B-3 MS	Matrix Spike	97	91	98	91
240-176712-B-3 MSD	Matrix Spike Duplicate	97	92	98	93
240-176713-1	TRIP BLANK_215	100	88	98	86
240-176713-2	MW-185S_111622	100	89	100	87
LCS 240-553589/4	Lab Control Sample	92	91	97	94
MB 240-553589/7	Method Blank	96	90	99	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176713-2	MW-185S_111622	106
240-176715-C-2 MS	Matrix Spike	109
240-176715-C-2 MSD	Matrix Spike Duplicate	113
LCS 240-553481/3	Lab Control Sample	98
MB 240-553481/4	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553589/7
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 14:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 14:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 14:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 14:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/28/22 14:54*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/28/22 14:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 14:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 14:54*	*1*

Lab Sample ID: LCS 240-553589/4
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.7		ug/L		99	76 - 123
trans-1,2-Dichloroethene	25.0	23.6		ug/L		95	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	12.5	10.1		ug/L		81	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10	U	250	207		ug/L		83	56 - 135
cis-1,2-Dichloroethene	370		250	599		ug/L		91	66 - 128
Tetrachloroethene	10	U	250	207		ug/L		83	62 - 131
trans-1,2-Dichloroethene	110		250	358		ug/L		98	56 - 136
Trichloroethene	590		250	885	E	ug/L		118	61 - 124
Vinyl chloride	10	U	125	91.1		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MSD
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	229		ug/L		91	56 - 135	10	26
cis-1,2-Dichloroethene	370		250	603		ug/L		93	66 - 128	1	14
Tetrachloroethene	10	U	250	217		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	110		250	356		ug/L		97	56 - 136	1	15
Trichloroethene	590		250	816	E	ug/L		90	61 - 124	8	15
Vinyl chloride	10	U	125	104		ug/L		83	43 - 157	13	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553481/4
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553481/3
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.78		ug/L		98	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176715-C-2 MS
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176715-C-2 MSD
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

GC/MS VOA

Analysis Batch: 553481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176713-2	MW-185S_111622	Total/NA	Water	8260D SIM	
MB 240-553481/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553481/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176715-C-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176715-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176713-1	TRIP BLANK_215	Total/NA	Water	8260D	
240-176713-2	MW-185S_111622	Total/NA	Water	8260D	
MB 240-553589/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553589/4	Lab Control Sample	Total/NA	Water	8260D	
240-176712-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-176712-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Client Sample ID: TRIP BLANK_215

Lab Sample ID: 240-176713-1

Date Collected: 11/16/22 00:00

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 19:04

Client Sample ID: MW-185S_111622

Lab Sample ID: 240-176713-2

Date Collected: 11/16/22 13:25

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 19:29
Total/NA	Analysis	8260D SIM		1	553481	CS	EET CAN	11/27/22 23:45

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpanchler	TAT if different from below: 10 day (✓) 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 215		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1855_111622	11/16/22	1325		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176713 Chain of Custody

Possible Hazard Identification: (✓) Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; (✓) Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

34921 Beacon St

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
	Arcadis	11/16/22 15:20	NOVI cold storage	Arcadis	11/16/22 15:20
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/17/22 0935		EETA	11/17/22 0935
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/17/22 941		EEC	11/18/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. D. D.

Cooler Received on 11/18/22 Opened on 11/18/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	N
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot# 0004201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176713-1
Sample date: 2022-11-16
Report received by CADENA: 2022-11-30
Initial Data Verification completed by CADENA: 2022-11-30
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176713-1

		Sample Name:	TRIP BLANK_215				MW-185S_111622			
		Lab Sample ID:	2401767131				2401767132			
		Sample Date:	11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

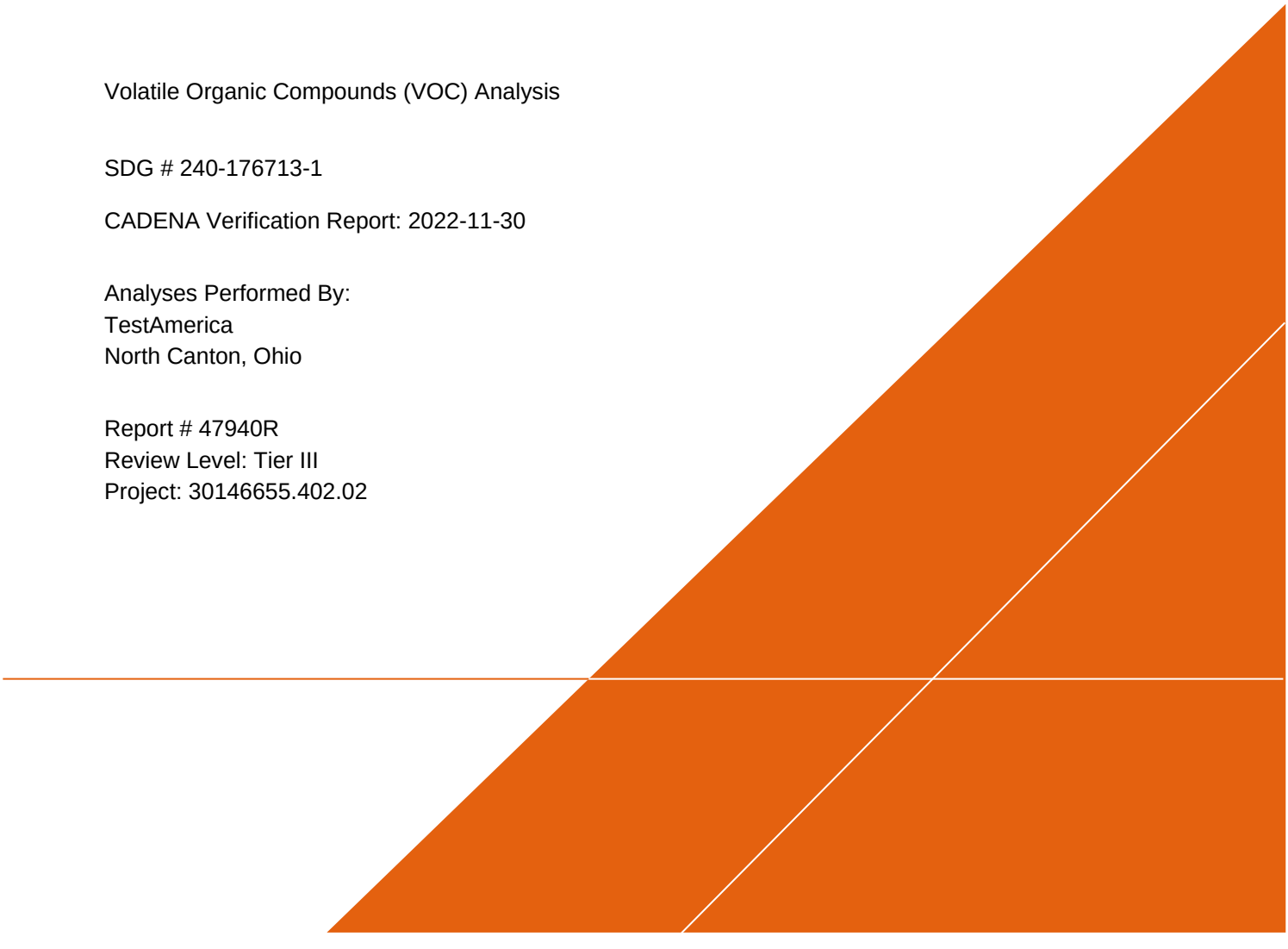
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176713-1

CADENA Verification Report: 2022-11-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47940R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176713-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_215	240-176713-1	Water	11/16/22		X	
MW-185S_111622	240-176713-2	Water	11/16/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpanchler	TAT if different from below: 10 day (✓) 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 215		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1855_111622	11/16/22	1325		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176713 Chain of Custody

Possible Hazard Identification: (✓) Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; (✓) Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

34921 Beacon St

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
	Arcadis	11/16/22 15:20	NOVI cold storage	Arcadis	11/16/22 15:20
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/17/22 0935		EEA	11/17/22 0935
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/17/22 941		EEC	11/18/22 8:00

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11/30/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Client Sample ID: TRIP BLANK_215
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176713-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 19:04*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/28/22 19:04*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/28/22 19:04*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/28/22 19:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176713-1

Client Sample ID: MW-185S_111622
Date Collected: 11/16/22 13:25
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176713-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/27/22 23:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 19:29*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/28/22 19:29*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/28/22 19:29*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/28/22 19:29*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:50:43 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176068-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176068-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176068-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176068-1	TRIP BLANK_129	Water	11/07/22 00:00	11/09/22 09:45
240-176068-2	MW-183S_110722	Water	11/07/22 11:48	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Client Sample ID: TRIP BLANK_129 — Lab Sample ID: 240-176068-1

No Detections.

Client Sample ID: MW-183S_110722 — Lab Sample ID: 240-176068-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Client Sample ID: TRIP BLANK_129
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176068-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/16/22 19:02*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/16/22 19:02*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 19:02*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 19:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Client Sample ID: MW-183S_110722
Date Collected: 11/07/22 11:48
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176068-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/15/22 14:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/22 19:25*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/16/22 19:25*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/16/22 19:25*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/22 19:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176036-F-4 MS	Matrix Spike	91	90	94	92
240-176036-F-4 MSD	Matrix Spike Duplicate	93	92	97	92
240-176068-1	TRIP BLANK_129	99	83	94	101
240-176068-2	MW-183S_110722	98	79	92	95
LCS 240-552188/5	Lab Control Sample	89	86	93	91
MB 240-552188/8	Method Blank	96	84	94	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176068-2	MW-183S_110722	104
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552188/8
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/22 11:48*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/16/22 11:48*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 11:48*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/22 11:48*	*1*

Lab Sample ID: LCS 240-552188/5
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.2		ug/L		91	63 - 134
cis-1,2-Dichloroethene	20.0	18.0		ug/L		90	77 - 123
Tetrachloroethene	20.0	20.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
Trichloroethene	20.0	19.1		ug/L		96	70 - 122
Vinyl chloride	20.0	17.0		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176036-F-4 MS
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	6.3	U	125	105		ug/L		84	56 - 135
cis-1,2-Dichloroethene	43		125	163		ug/L		96	66 - 128
Tetrachloroethene	6.3	U	125	113		ug/L		91	62 - 131
trans-1,2-Dichloroethene	6.3	U	125	104		ug/L		83	56 - 136
Trichloroethene	6.3	U	125	110		ug/L		88	61 - 124
Vinyl chloride	94		125	189		ug/L		76	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176036-F-4 MS
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176036-F-4 MSD
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	6.3	U	125	108		ug/L		86	56 - 135	3	26
cis-1,2-Dichloroethene	43		125	161		ug/L		94	66 - 128	1	14
Tetrachloroethene	6.3	U	125	124		ug/L		99	62 - 131	9	20
trans-1,2-Dichloroethene	6.3	U	125	108		ug/L		87	56 - 136	4	15
Trichloroethene	6.3	U	125	116		ug/L		93	61 - 124	6	15
Vinyl chloride	94		125	203		ug/L		87	43 - 157	7	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176068-2	MW-183S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176068-1	TRIP BLANK_129	Total/NA	Water	8260D	
240-176068-2	MW-183S_110722	Total/NA	Water	8260D	
MB 240-552188/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552188/5	Lab Control Sample	Total/NA	Water	8260D	
240-176036-F-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176036-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Client Sample ID: TRIP BLANK_129

Lab Sample ID: 240-176068-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552188	AJS	EET CAN	11/16/22 19:02

Client Sample ID: MW-183S_110722

Lab Sample ID: 240-176068-2

Date Collected: 11/07/22 11:48

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552188	AJS	EET CAN	11/16/22 19:25
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 14:40

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176068-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com		
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

COC No: 1 of 1 COCs

For lab use only: Walk-in client; Lab sampling; Job/SDG No:

Analysis Turnaround Time: TAT if different from below — 3 weeks; 10 day ✓ 2 weeks; 1 week; 2 days; 1 day

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_129	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1835_110722	11/7/22	11:48		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176068 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34934 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/7/22 16:10	Non cod storage	Arcadis	11/7/22 16:10
	ARCADIS	11/8/22 0915	Jeri Hoe	EETA	11/8/22 0915
Jeri Hoe	EETA	11-8-22 943	Received in Laboratory by:	EETDC	11-9-22 945

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176068
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-9-22 Opened on 11-9-22

Cooler unpacked by: Jamy Rojas

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286777
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION
Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login # : 1760068

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/22/2022 7:50:43 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176068-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176068-1

		Sample Name:	TRIP BLANK_129				MW-183S_110722			
		Lab Sample ID:	2401760681				2401760682			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

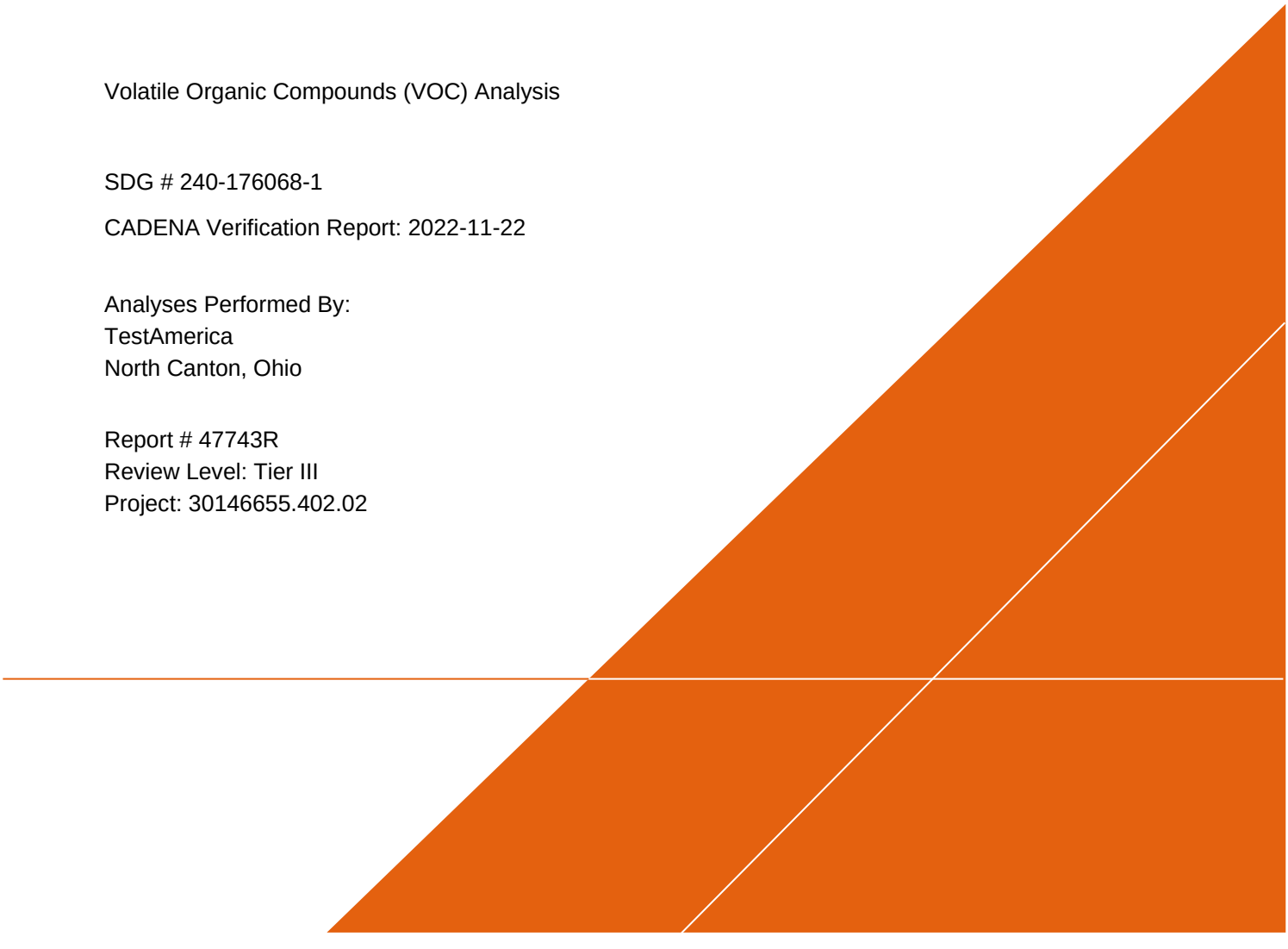
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176068-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47743R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176068-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_129	240-176068-1	Water	11/07/22		X	
MW-183S_110722	240-176068-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 30, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other	
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only		
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks; 2 weeks (✓); 1 week; 2 days; 1 day		Walk-in client		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling		
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:		
PO # 30146655.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_129	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1835_110722	11/7/22	11:48		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176068 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34934 Standish St

Submit all results through Cadena at jtomalia@cadenaco com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time:
Samantha Szpaichler	Arcadis	11/7/22 16:10	Cold storage	Arcadis	11/7/22 16:10
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/8/22 0915	Jen Hall	EETA	11/8/22 0915
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jen Hall	EETA	11-8-22 943		EETDC	11-9-22 945

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Client Sample ID: TRIP BLANK_129
Lab Sample ID: 240-176068-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/16/22 19:02*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/16/22 19:02*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 19:02*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 19:02*	*1*

Client Sample ID: MW-183S_110722
Lab Sample ID: 240-176068-2
Date Collected: 11/07/22 11:48
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/15/22 14:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 19:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 19:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 19:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 19:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/22 19:25*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/16/22 19:25*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/16/22 19:25*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/16/22 19:25*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:40:39 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176625-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Job ID: 240-176625-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176625-1

Comments
No additional comments.

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 1.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176625-1	TRIP BLANK_217	Water	11/15/22 00:00	11/17/22 08:00
240-176625-2	MW-112S_111522	Water	11/15/22 13:40	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Client Sample ID: TRIP BLANK_217 — Lab Sample ID: 240-176625-1

No Detections.

Client Sample ID: MW-112S_111522 — Lab Sample ID: 240-176625-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Client Sample ID: TRIP BLANK_217
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176625-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 15:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 15:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 15:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/25/22 15:59*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 15:59*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/25/22 15:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 15:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Client Sample ID: MW-112S_111522
Date Collected: 11/15/22 13:40
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176625-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/27/22 23:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 20:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 20:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 20:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/25/22 20:10*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/25/22 20:10*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 20:10*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/25/22 20:10*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176621-A-2 MS	Matrix Spike	84	95	95	84
240-176621-D-2 MSD	Matrix Spike Duplicate	85	94	96	85
240-176625-1	TRIP BLANK_217	98	78	93	95
240-176625-2	MW-112S_111522	102	73	91	96
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176625-2	MW-112S_111522	79
240-176634-I-5 MS	Matrix Spike	80
240-176634-O-5 MSD	Matrix Spike Duplicate	80
LCS 240-553480/3	Lab Control Sample	76
MB 240-553480/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-D-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553480/4
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553480/3
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176634-I-5 MS
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176634-O-5 MSD
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

GC/MS VOA

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176625-1	TRIP BLANK_217	Total/NA	Water	8260D	
240-176625-2	MW-112S_111522	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176621-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 553480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176625-2	MW-112S_111522	Total/NA	Water	8260D SIM	
MB 240-553480/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553480/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176634-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176634-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Client Sample ID: TRIP BLANK_217

Lab Sample ID: 240-176625-1

Date Collected: 11/15/22 00:00

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 15:59

Client Sample ID: MW-112S_111522

Lab Sample ID: 240-176625-2

Date Collected: 11/15/22 13:40

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 20:10
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/27/22 23:05

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Leticia Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_217	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1125_111522	11/15/22	13:40		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176625 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34935 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leticia Ferreira	Arcadis	11/15/22 15:25	Non Cold Storage	Arcadis	11/15/22 15:25
	ARCADIS	11/15/22 1035		EETA	11/16/22 1035
	EETA	11/16/22 10:40	Received in Laboratory by:	EETMC	11-17-22 800

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176625
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-17-22 Opened on 11-17-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 14 ~~Foam Box~~ Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____ Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y N), # of containers (Y N), and sample type of grab/comp (Y N) 11-17-22
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC286797**
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176625

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

December 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176625-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176625-1

		Sample Name:	TRIP BLANK_217				MW-112S_111522			
		Lab Sample ID:	2401766251				2401766252			
		Sample Date:	11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

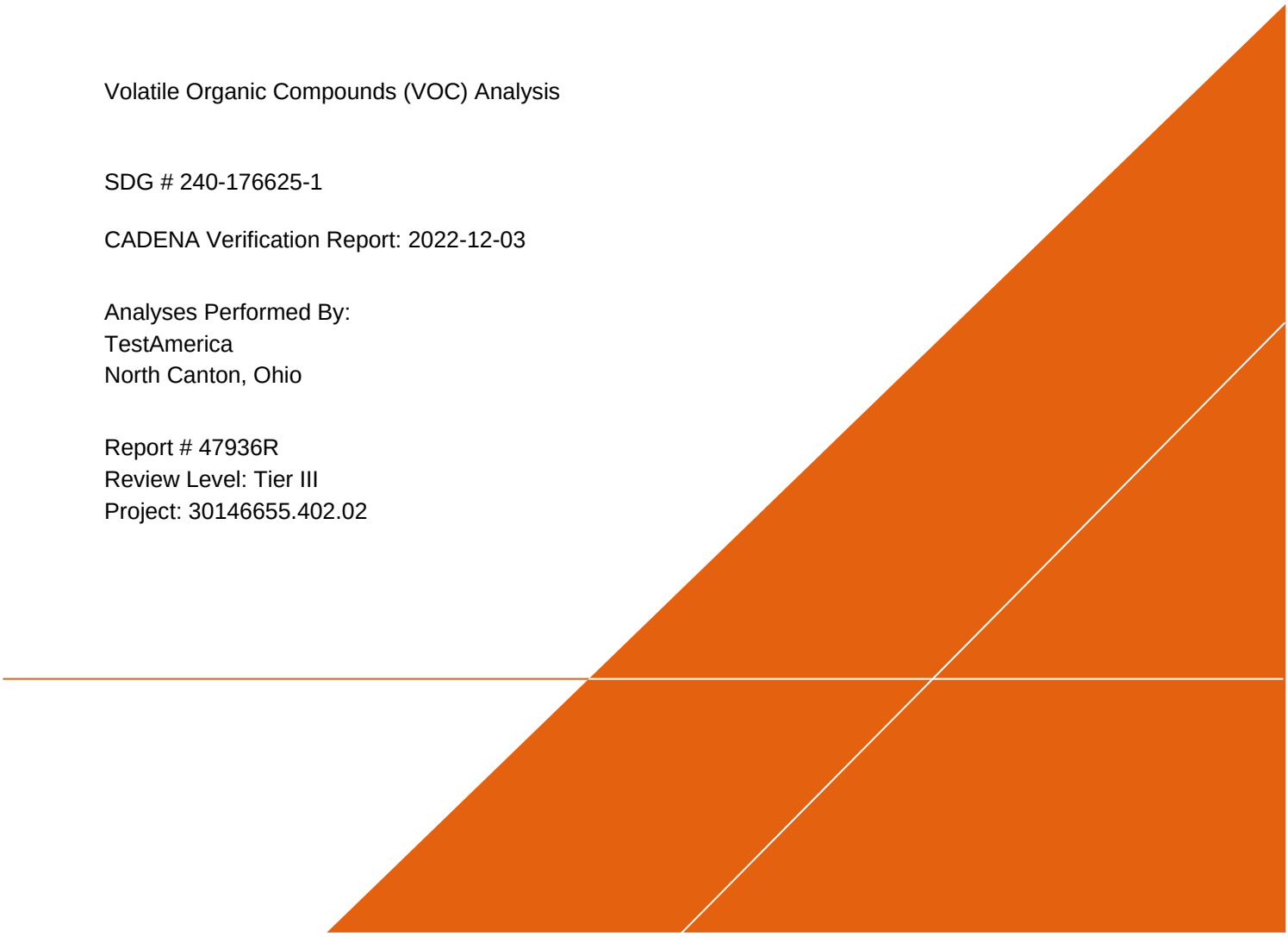
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176625-1

CADENA Verification Report: 2022-12-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47936R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176625-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_217	240-176625-1	Water	11/15/22		X	
MW-112S_111522	240-176625-2	Water	11/15/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Leticia Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_217	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1125_111522	11/15/22	13:40		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176625 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34935 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leticia Ferreira	Arcadis	11/15/22 15:25	Non Cold Storage	Arcadis	11/15/22 15:25
	ARCADIS	11/15/22 1035		EETA	11/16/22 1035
	EETA	11/16/22 10:40		EETMC	11-17-22 800

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Client Sample ID: TRIP BLANK_217
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176625-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 15:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 15:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 15:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 15:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/25/22 15:59*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 15:59*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/25/22 15:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/25/22 15:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176625-1

Client Sample ID: MW-112S_111522
Date Collected: 11/15/22 13:40
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176625-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/27/22 23:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 20:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 20:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 20:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 20:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/25/22 20:10*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/25/22 20:10*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 20:10*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/25/22 20:10*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/6/2022 2:43:18 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176840-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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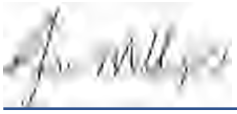
Authorization



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176840-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176840-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176840-1	TRIP BLANK_191	Water	11/17/22 00:00	11/19/22 08:00
240-176840-2	MW-89S_111722	Water	11/17/22 10:45	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Client Sample ID: TRIP BLANK_191 — Lab Sample ID: 240-176840-1

No Detections.

Client Sample ID: MW-89S_111722 — Lab Sample ID: 240-176840-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Client Sample ID: TRIP BLANK_191

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176840-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 07:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 07:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 07:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 07:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 07:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 07:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/29/22 07:44*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/29/22 07:44*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 07:44*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 07:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Client Sample ID: MW-89S_111722
Date Collected: 11/17/22 10:45
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176840-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 23:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/28/22 23:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 10:16	1
cis-1,2-Dichloroethene	**1.0**		1.0	0.46	ug/L			11/29/22 10:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 10:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 10:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 10:16*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/29/22 10:16*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 10:16*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/29/22 10:16*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176840-1	TRIP BLANK_191	93	101	104	99
240-176840-2	MW-89S_111722	92	101	104	101
240-176843-D-5 MS	Matrix Spike	85	99	104	99
240-176843-D-5 MSD	Matrix Spike Duplicate	83	98	104	96
LCS 240-553659/3	Lab Control Sample	84	101	105	97
MB 240-553659/4	Method Blank	91	99	101	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
240-176840-2	MW-89S_111722	103
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553659/4
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 06:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 06:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 06:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 06:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 06:53*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 06:53*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 06:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 06:53*	*1*

Lab Sample ID: LCS 240-553659/3
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		97	77 - 123
Tetrachloroethene	25.0	25.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	25.0	25.3		ug/L		101	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	28.4		ug/L		114	56 - 135
cis-1,2-Dichloroethene	4.8		25.0	32.9		ug/L		112	66 - 128
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131
trans-1,2-Dichloroethene	0.74	J	25.0	24.1		ug/L		93	56 - 136
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124
Vinyl chloride	5.4		25.0	32.1		ug/L		107	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-176843-D-5 MSD
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	4	26
cis-1,2-Dichloroethene	4.8		25.0	31.3		ug/L		106	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131	2	20
trans-1,2-Dichloroethene	0.74	J	25.0	23.2		ug/L		90	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	2	15
Vinyl chloride	5.4		25.0	30.9		ug/L		102	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	104		78 - 122
Dibromofluoromethane (Surr)	96		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		66 - 120		11/28/22 16:04	1

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		66 - 120

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176840-2	MW-89S_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176840-1	TRIP BLANK_191	Total/NA	Water	8260D	
240-176840-2	MW-89S_111722	Total/NA	Water	8260D	
MB 240-553659/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553659/3	Lab Control Sample	Total/NA	Water	8260D	
240-176843-D-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-176843-D-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Client Sample ID: TRIP BLANK_191

Lab Sample ID: 240-176840-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 07:44

Client Sample ID: MW-89S_111722

Lab Sample ID: 240-176840-2

Date Collected: 11/17/22 10:45

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 10:16
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 23:22

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

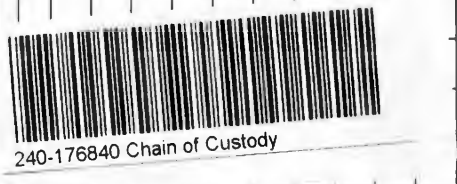
TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sutaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zinc Acetate / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 191	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-89S-111722	11/17/22	1045		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon St Backyard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sutaria	Arcadis	11/17/22 1357	Arcadis Cold St.	Arcadis	11/17/22 1750
	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945		EETA	11/18/22 0945
	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11-18-22 1002		KLC	11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176840
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. D. D.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Done 11-21-22

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176840-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176840-1

		Sample Name:	TRIP BLANK_191				MW-89S_111722			
		Lab Sample ID:	2401768401				2401768402			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	1.0	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176840-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47917R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176840-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_191	240-176840-1	Water	11/17/2022		X	
MW-89S_111722	240-176840-2	Water	11/17/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_191 MW-89S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 12, 2022

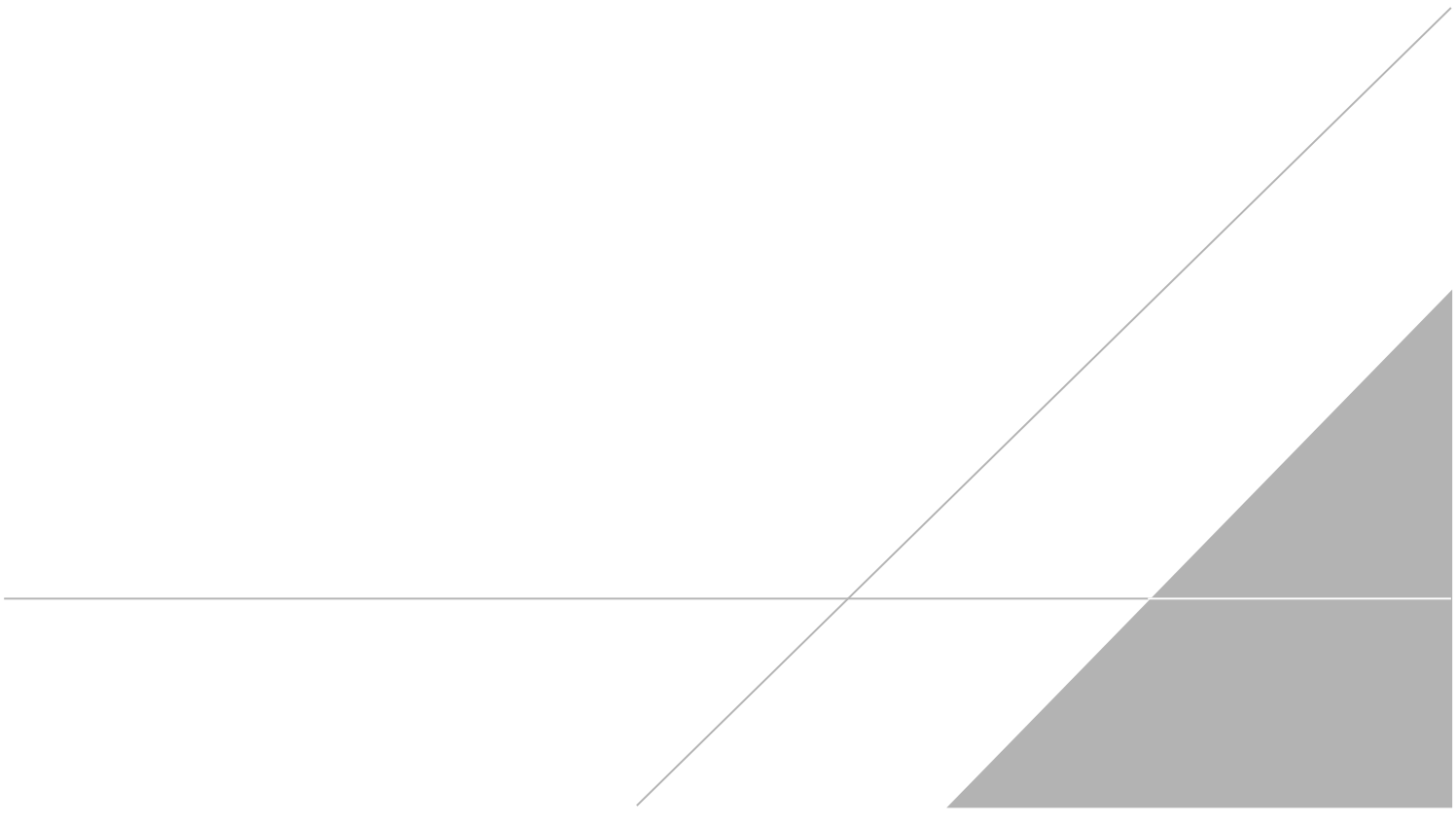
PEER REVIEW: Andrew Korycinski

DATE: December 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN 190

Chain of Custody Record

TestAmerica

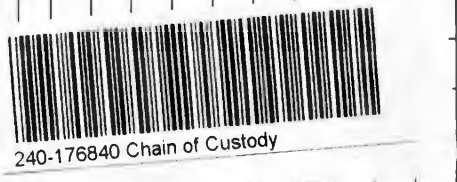
TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sutaria	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:	3 weeks / 2 weeks / 1 week / 2 days / 1 day		Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zinc Acetate / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 191	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-89S-111722	11/17/22	1045		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34940 Beacon St Backyard

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sutaria	Arcadis	11/17/22 1357	Arcadis Cold St.	Arcadis	11/17/22 1750
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945		EETA	11/18/22 0945
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11-18-22 1002		KSC	11/19/22 8:00

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Client Sample ID: TRIP BLANK_191

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176840-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 07:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 07:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 07:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 07:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 07:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 07:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/29/22 07:44*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/29/22 07:44*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 07:44*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 07:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176840-1

Client Sample ID: MW-89S_111722
Date Collected: 11/17/22 10:45
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176840-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 23:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/28/22 23:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 10:16	1
cis-1,2-Dichloroethene	**1.0**		1.0	0.46	ug/L			11/29/22 10:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 10:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 10:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 10:16*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/29/22 10:16*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/29/22 10:16*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/29/22 10:16*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/30/2022 3:55:30 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176716-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176716-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176716-1

Receipt
The samples were received on 11/18/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176716-1	TRIP BLANK_214	Water	11/16/22 00:00	11/18/22 08:00
240-176716-2	MW-158S_111622	Water	11/16/22 11:45	11/18/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Client Sample ID: TRIP BLANK_214 — Lab Sample ID: 240-176716-1

No Detections.

Client Sample ID: MW-158S_111622 — Lab Sample ID: 240-176716-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	63		2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Client Sample ID: TRIP BLANK_214
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176716-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/28/22 18:14*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 18:14*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/28/22 18:14*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/28/22 18:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Client Sample ID: MW-158S_111622
Date Collected: 11/16/22 11:45
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176716-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	63		2.0	0.86	ug/L			11/28/22 01:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/28/22 01:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/28/22 18:39*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/28/22 18:39*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 18:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176712-B-3 MS	Matrix Spike	97	91	98	91
240-176712-B-3 MSD	Matrix Spike Duplicate	97	92	98	93
240-176716-1	TRIP BLANK_214	99	87	98	89
240-176716-2	MW-158S_111622	100	89	100	90
LCS 240-553589/4	Lab Control Sample	92	91	97	94
MB 240-553589/7	Method Blank	96	90	99	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176715-C-2 MS	Matrix Spike	109
240-176715-C-2 MSD	Matrix Spike Duplicate	113
240-176716-2	MW-158S_111622	99
LCS 240-553481/3	Lab Control Sample	98
MB 240-553481/4	Method Blank	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553589/7

Matrix: Water
Analysis Batch: 553589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 14:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 14:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 14:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 14:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/28/22 14:54*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/28/22 14:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 14:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 14:54*	*1*

Lab Sample ID: LCS 240-553589/4

Matrix: Water
Analysis Batch: 553589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.7		ug/L		99	76 - 123
trans-1,2-Dichloroethene	25.0	23.6		ug/L		95	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	12.5	10.1		ug/L		81	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MS

Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10	U	250	207		ug/L		83	56 - 135
cis-1,2-Dichloroethene	370		250	599		ug/L		91	66 - 128
Tetrachloroethene	10	U	250	207		ug/L		83	62 - 131
trans-1,2-Dichloroethene	110		250	358		ug/L		98	56 - 136
Trichloroethene	590		250	885	E	ug/L		118	61 - 124
Vinyl chloride	10	U	125	91.1		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MSD
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	229		ug/L		91	56 - 135	10	26
cis-1,2-Dichloroethene	370		250	603		ug/L		93	66 - 128	1	14
Tetrachloroethene	10	U	250	217		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	110		250	356		ug/L		97	56 - 136	1	15
Trichloroethene	590		250	816	E	ug/L		90	61 - 124	8	15
Vinyl chloride	10	U	125	104		ug/L		83	43 - 157	13	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553481/4
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553481/3
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.78		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176715-C-2 MS
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176715-C-2 MSD
Matrix: Water
Analysis Batch: 553481

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

GC/MS VOA

Analysis Batch: 553481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176716-2	MW-158S_111622	Total/NA	Water	8260D SIM	
MB 240-553481/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553481/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176715-C-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176715-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176716-1	TRIP BLANK_214	Total/NA	Water	8260D	
240-176716-2	MW-158S_111622	Total/NA	Water	8260D	
MB 240-553589/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553589/4	Lab Control Sample	Total/NA	Water	8260D	
240-176712-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-176712-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Client Sample ID: TRIP BLANK_214

Lab Sample ID: 240-176716-1

Date Collected: 11/16/22 00:00

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 18:14

Client Sample ID: MW-158S_111622

Lab Sample ID: 240-176716-2

Date Collected: 11/16/22 11:45

Matrix: Water

Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 18:39
Total/NA	Analysis	8260D SIM		1	553481	CS	EET CAN	11/28/22 01:47

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day ☑ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling; Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_214	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1585_111622	11/16/22	11:45		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176716 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34950 Beacon St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/16/22 15:20	Novi cold storage	Arcadis	11/16/22 15:20
[signature]	ARCADIS	11/17/22 0935	[signature]	EEA	11/17/22 0935
[signature]	EEA	11/17/22 941	Received in Laboratory by: M. A. A.	Company: EEC	Date/Time: 11/18/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. D. D.

Cooler Received on 11/18/22 Opened on 11/18/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176716-1
Sample date: 2022-11-16
Report received by CADENA: 2022-11-30
Initial Data Verification completed by CADENA: 2022-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176716-1

		Sample Name:	TRIP BLANK_214				MW-158S_111622			
		Lab Sample ID:	2401767161				2401767162			
		Sample Date:	11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					63	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

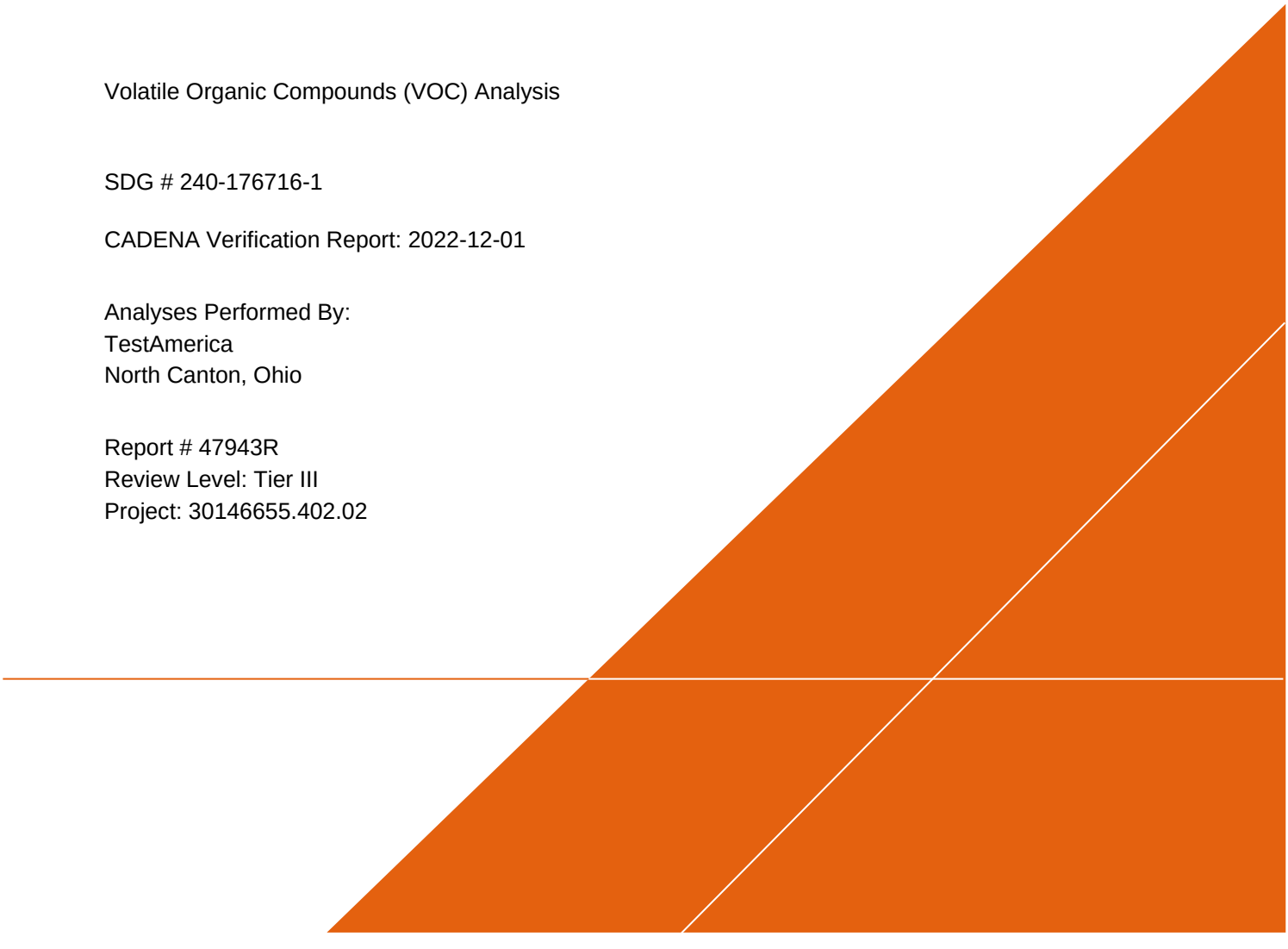
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176716-1

CADENA Verification Report: 2022-12-01

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47943R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176716-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_214	240-176716-1	Water	11/16/22		X	
MW-158S_111622	240-176716-2	Water	11/16/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 14, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day ☑ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab sampling ☐ Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
5 TRIP BLANK_214	11/16/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
6 MW-1585_111622	11/16/22	11:45		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176716 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client ☐ Disposal By Lab ☑ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34950 Beacon St

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time
Samantha Szpaichler	Arcadis	11/16/22 15:20	Novi cold storage	Arcadis	11/16/22 15:20
[signature]	ARCADIS	11/17/22 0935	[signature]	EEA	11/17/22 0935
[signature]	EEA	11/17/22 941	Received in Laboratory by: M. A. A.	Company: EEC	Date/Time: 11/18/22 8:00

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Client Sample ID: TRIP BLANK_214
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176716-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/28/22 18:14*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/28/22 18:14*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/28/22 18:14*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/28/22 18:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176716-1

Client Sample ID: MW-158S_111622
Date Collected: 11/16/22 11:45
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176716-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	63		2.0	0.86	ug/L			11/28/22 01:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/28/22 01:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/28/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/28/22 18:39*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/28/22 18:39*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 18:39*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/30/2022 4:01:12 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176835-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176835-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176835-1

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176835-1	TRIP BLANK_189	Water	11/17/22 00:00	11/19/22 08:00
240-176835-2	MW-88S_111722	Water	11/17/22 12:06	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Client Sample ID: TRIP BLANK_189 — Lab Sample ID: 240-176835-1

No Detections.

Client Sample ID: MW-88S_111722 — Lab Sample ID: 240-176835-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Client Sample ID: TRIP BLANK_189

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176835-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 22:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 22:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 22:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 22:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 22:52*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/28/22 22:52*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/22 22:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 22:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Client Sample ID: MW-88S_111722

Date Collected: 11/17/22 12:06
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176835-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 20:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/28/22 20:32*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 02:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 02:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 02:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 02:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 02:15*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 02:15*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 02:15*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 02:15*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176835-1	TRIP BLANK_189	91	100	105	100
240-176835-2	MW-88S_111722	91	98	101	98
240-176837-F-2 MS	Matrix Spike	83	100	105	97
240-176837-F-2 MSD	Matrix Spike Duplicate	83	100	104	97
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176835-2	MW-88S_111722	100
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176835-2	MW-88S_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176835-1	TRIP BLANK_189	Total/NA	Water	8260D	
240-176835-2	MW-88S_111722	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176837-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Client Sample ID: TRIP BLANK_189

Lab Sample ID: 240-176835-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/28/22 22:52

Client Sample ID: MW-88S_111722

Lab Sample ID: 240-176835-2

Date Collected: 11/17/22 12:06

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 02:15
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 20:32

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

COC No: 1 of 1 COCs

For lab use only: Walk-in client; Lab sampling; Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
c TRIP BLANK_189	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
d MW-885-111722	11/17/22	12:06		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176835 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34965 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1621	Novi, Cold Storage	Arcadis	11/17/22 1621
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945	J. Hall	EETA	11/18/22 0945
Relinquished by: J. Hall	Company: EETA	Date/Time: 11-18-22 1002	Received in Laboratory by:	Company: EEC	Date/Time: 11/19/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176635
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. A. A.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

11-21-22

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176835-1
Sample date: 2022-11-17
Report received by CADENA: 2022-11-30
Initial Data Verification completed by CADENA: 2022-12-01
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176835-1

		Sample Name:	TRIP BLANK_189				MW-88S_111722			
		Lab Sample ID:	2401768351				2401768352			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

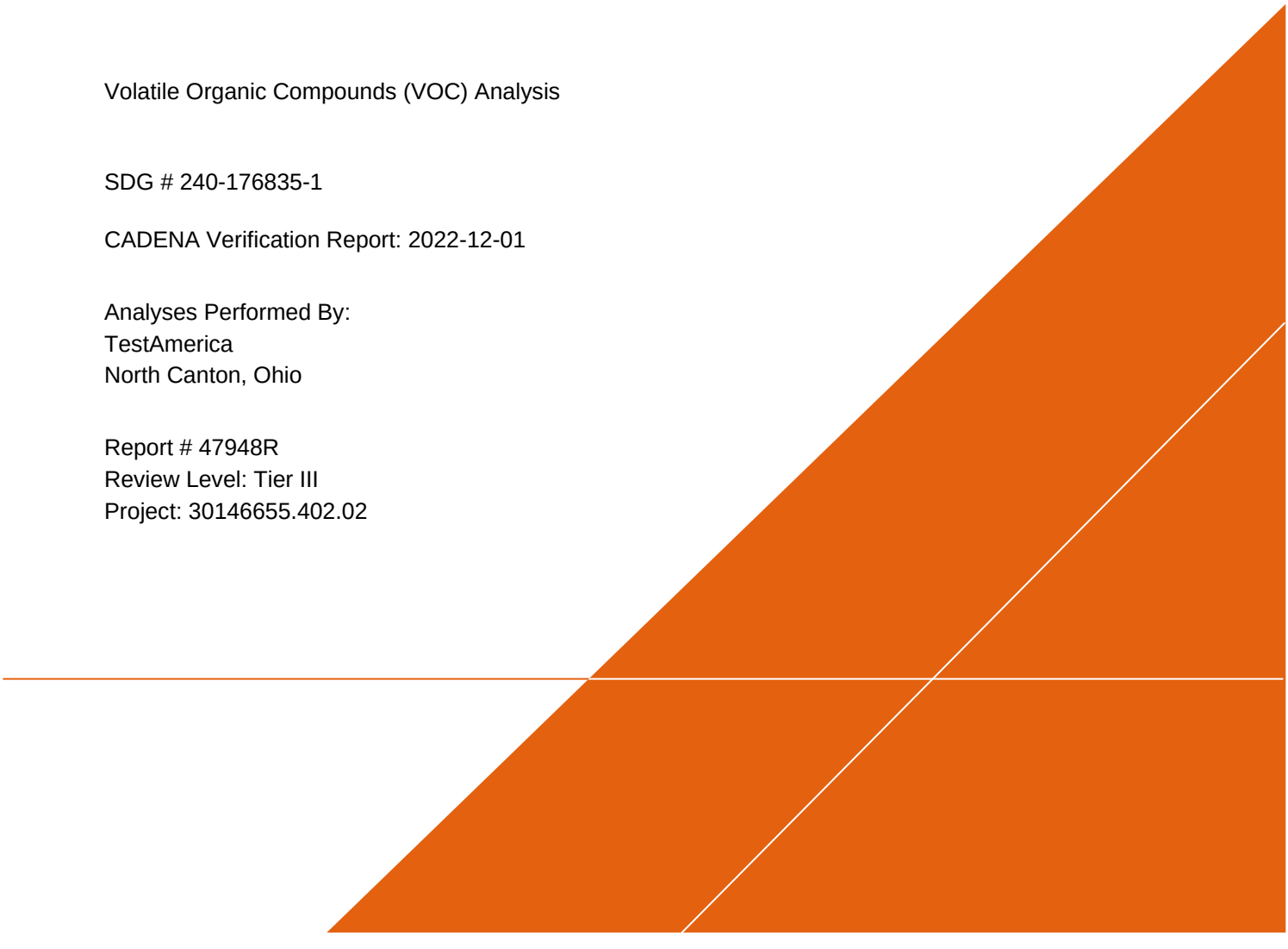
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176835-1

CADENA Verification Report: 2022-12-01

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47948R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176835-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_189	240-176835-1	Water	11/17/22		X	
MW-88S_111722	240-176835-2	Water	11/17/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_189 MW-88S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Initial / Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Initial / Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 15, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

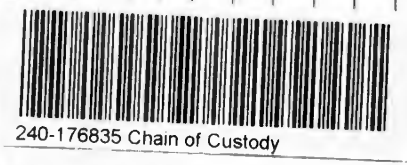
TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240			For lab use only
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Project Name: Ford LTP Off-Site	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Lab sampling
Project Number: 30146655.402.04	Method of Shipment/Carrier:			Job/SDG No:
PO # 30146655.402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
c TRIP BLANK_189	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
d MW-885-111722	11/17/22	12:06		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34965 Wadsworth

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1621	Novi Cold Storage	Arcadis	11/17/22 1621
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/18/22 0945	J. Hall	EETA	11/18/22 0945
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
J. Hall	EETA	11-18-22 1002		EEC	11/19/22 8:00

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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Client Sample ID: TRIP BLANK_189

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176835-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 22:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 22:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 22:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 22:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 22:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 22:52*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/28/22 22:52*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/28/22 22:52*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 22:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176835-1

Client Sample ID: MW-88S_111722

Date Collected: 11/17/22 12:06
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176835-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 20:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*11/28/22 20:32*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 02:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 02:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 02:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 02:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 02:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 02:15*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/29/22 02:15*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 02:15*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 02:15*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:50:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176067-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176067-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176067-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176067-1	TRIP BLANK_94	Water	11/07/22 00:00	11/09/22 09:45
240-176067-2	MW-126S_110722	Water	11/07/22 10:00	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Client Sample ID: TRIP BLANK_94 — Lab Sample ID: 240-176067-1

No Detections.

Client Sample ID: MW-126S_110722 — Lab Sample ID: 240-176067-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Client Sample ID: TRIP BLANK_94
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176067-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/22 18:16*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/16/22 18:16*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/16/22 18:16*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/22 18:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Client Sample ID: MW-126S_110722
Date Collected: 11/07/22 10:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176067-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/15/22 14:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/16/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/16/22 18:39*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/16/22 18:39*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 18:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176036-F-4 MS	Matrix Spike	91	90	94	92
240-176036-F-4 MSD	Matrix Spike Duplicate	93	92	97	92
240-176067-1	TRIP BLANK_94	98	80	95	97
240-176067-2	MW-126S_110722	104	83	96	102
LCS 240-552188/5	Lab Control Sample	89	86	93	91
MB 240-552188/8	Method Blank	96	84	94	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176067-2	MW-126S_110722	114
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552188/8
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/16/22 11:48*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*11/16/22 11:48*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 11:48*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/22 11:48*	*1*

Lab Sample ID: LCS 240-552188/5
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.2		ug/L		91	63 - 134
cis-1,2-Dichloroethene	20.0	18.0		ug/L		90	77 - 123
Tetrachloroethene	20.0	20.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
Trichloroethene	20.0	19.1		ug/L		96	70 - 122
Vinyl chloride	20.0	17.0		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176036-F-4 MS
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	6.3	U	125	105		ug/L		84	56 - 135
cis-1,2-Dichloroethene	43		125	163		ug/L		96	66 - 128
Tetrachloroethene	6.3	U	125	113		ug/L		91	62 - 131
trans-1,2-Dichloroethene	6.3	U	125	104		ug/L		83	56 - 136
Trichloroethene	6.3	U	125	110		ug/L		88	61 - 124
Vinyl chloride	94		125	189		ug/L		76	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176036-F-4 MS
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176036-F-4 MSD
Matrix: Water
Analysis Batch: 552188

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	6.3	U	125	108		ug/L		86	56 - 135	3	26
cis-1,2-Dichloroethene	43		125	161		ug/L		94	66 - 128	1	14
Tetrachloroethene	6.3	U	125	124		ug/L		99	62 - 131	9	20
trans-1,2-Dichloroethene	6.3	U	125	108		ug/L		87	56 - 136	4	15
Trichloroethene	6.3	U	125	116		ug/L		93	61 - 124	6	15
Vinyl chloride	94		125	203		ug/L		87	43 - 157	7	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	93		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/15/22 09:20	1

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.1		ug/L		101	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		66 - 120

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176067-2	MW-126S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176067-1	TRIP BLANK_94	Total/NA	Water	8260D	
240-176067-2	MW-126S_110722	Total/NA	Water	8260D	
MB 240-552188/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552188/5	Lab Control Sample	Total/NA	Water	8260D	
240-176036-F-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176036-F-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Client Sample ID: TRIP BLANK_94

Lab Sample ID: 240-176067-1

Date Collected: 11/07/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552188	AJS	EET CAN	11/16/22 18:16

Client Sample ID: MW-126S_110722

Lab Sample ID: 240-176067-2

Date Collected: 11/07/22 10:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552188	AJS	EET CAN	11/16/22 18:39
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 14:15

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176067-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_94	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-126S_110722	11/7/22	10:00		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176067 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34966 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/7/22 16:10	cod storage	Arcadis	11/7/22 16:10
	ARCADIS	11/7/22 0915		EETA	11/7/22 0915
Lei Hae	EETA	11/8/22 943	Received in Laboratory by:	ETDC	11-9-22 945

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11/22/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176067
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Danny Rogers

Cooler Received on 11.9.22 Opened on 11.9.22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286777
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176067

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176067-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176067-1

		Sample Name:	TRIP BLANK_94				MW-126S_110722			
		Lab Sample ID:	2401760671				2401760672			
		Sample Date:	11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

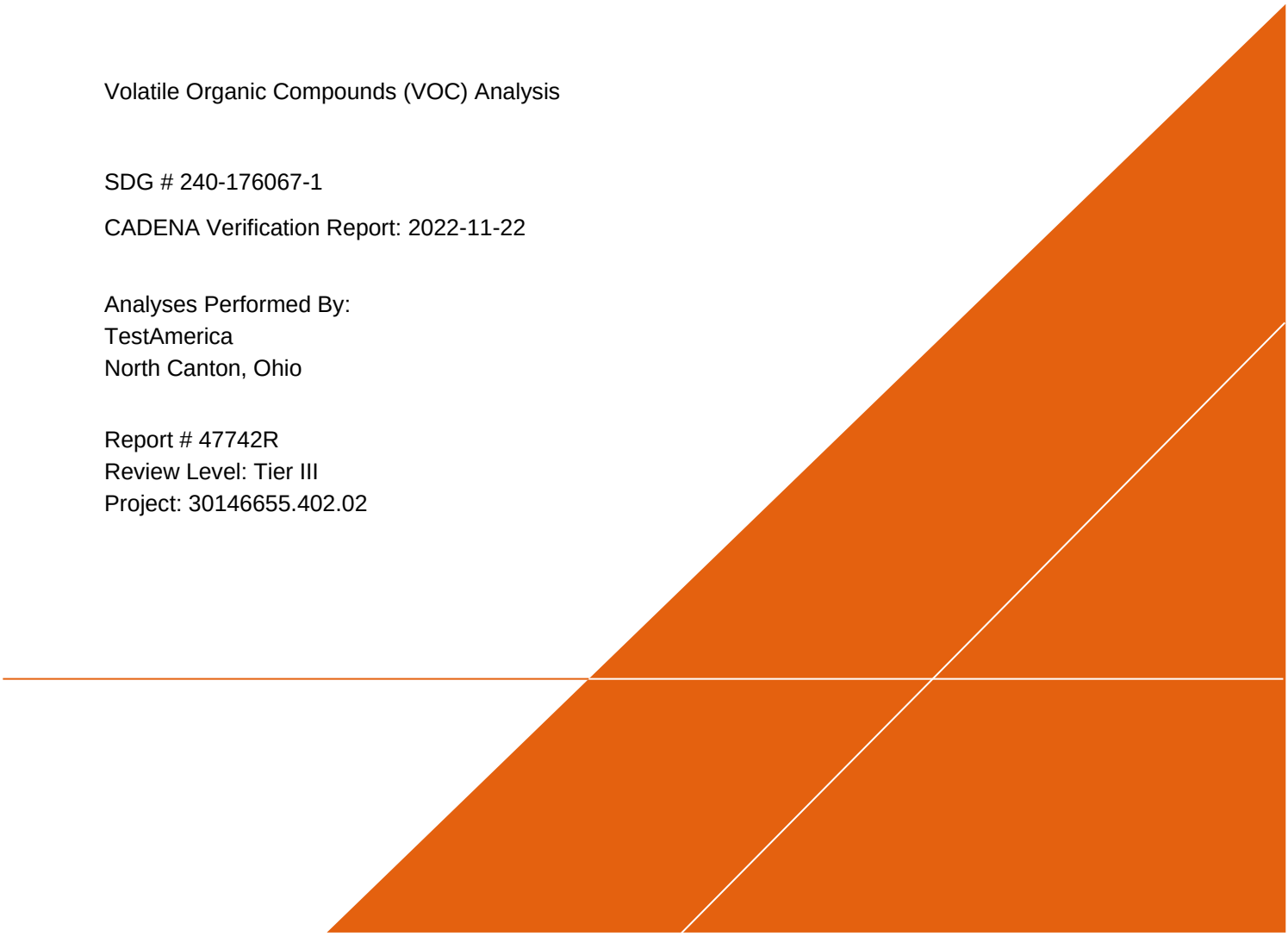
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176067-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47742R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176067-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_94	240-176067-1	Water	11/07/22		X	
MW-126S_110722	240-176067-2	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 30, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_94	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-126S 110722	11/7/22	10:00		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176067 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 34966 Standish St

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/7/22 16:10	cod storage	Arcadis	11/7/22 16:10
[signature]	ARCADIS	11/7/22 0915	[signature]	EE+A	11/7/22 0915
Lei Hae	EE+A	11/8/22 943	[signature]	BETAC	11-9-22 945

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Client Sample ID: TRIP BLANK_94
Lab Sample ID: 240-176067-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/16/22 18:16*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/16/22 18:16*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/16/22 18:16*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/16/22 18:16*	*1*

Client Sample ID: MW-126S_110722
Lab Sample ID: 240-176067-2
Date Collected: 11/07/22 10:00
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/15/22 14:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/16/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/16/22 18:39*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/16/22 18:39*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/16/22 18:39*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:23:47 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176620-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Job ID: 240-176620-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176620-1

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1°C and 1.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176620-1	TRIP BLANK_206	Water	11/15/22 00:00	11/17/22 08:00
240-176620-2	MW-109S_111522	Water	11/15/22 12:20	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Client Sample ID: TRIP BLANK_206 — Lab Sample ID: 240-176620-1

No Detections.

Client Sample ID: MW-109S_111522 — Lab Sample ID: 240-176620-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Client Sample ID: TRIP BLANK_206
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176620-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/25/22 13:53*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 13:53*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/25/22 13:53*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/25/22 13:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Client Sample ID: MW-109S_111522
Date Collected: 11/15/22 12:20
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176620-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/28/22 14:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 18:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 18:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 18:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 18:04*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/25/22 18:04*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/25/22 18:04*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/25/22 18:04*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176620-1	TRIP BLANK_206	95	75	90	93
240-176620-2	MW-109S_111522	97	73	92	93
240-176621-A-2 MS	Matrix Spike	84	95	95	84
240-176621-D-2 MSD	Matrix Spike Duplicate	85	94	96	85
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176620-2	MW-109S_111522	80
240-176709-AA-1 MS	Matrix Spike	74
240-176709-AZ-1 MSD	Matrix Spike Duplicate	76
LCS 240-553482/3	Lab Control Sample	80
MB 240-553482/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-D-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553482/4
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 07:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/28/22 07:32*	*1*

Lab Sample ID: LCS 240-553482/3
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.77		ug/L		98	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176709-AA-1 MS
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	55		10.0	62.1	4	ug/L		69	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

Lab Sample ID: 240-176709-AZ-1 MSD
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	55		10.0	62.4	4	ug/L		72	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

GC/MS VOA

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176620-1	TRIP BLANK_206	Total/NA	Water	8260D	
240-176620-2	MW-109S_111522	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176621-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 553482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176620-2	MW-109S_111522	Total/NA	Water	8260D SIM	
MB 240-553482/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553482/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176709-AA-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176709-AZ-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Client Sample ID: TRIP BLANK_206

Lab Sample ID: 240-176620-1

Date Collected: 11/15/22 00:00

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 13:53

Client Sample ID: MW-109S_111522

Lab Sample ID: 240-176620-2

Date Collected: 11/15/22 12:20

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 18:04
Total/NA	Analysis	8260D SIM		1	553482	CS	EET CAN	11/28/22 14:43

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
c	TRIP BLANK_206	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
o	MW-109S-111522	11/15/22	1220		6						6					N	G	X	X	XX	XX	XX	X		3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176620 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34998 Beacon side yard
Submit all results through Cadena at jlomolia@cadenaco.com Cadena #E20363
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/15/22 1325	Arcadis Cold St.	Arcadis	11/15/22 1325
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/16/22 1035		EETA	11/16/22 1035
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/16/22 10:40	Rachelle Arnold	EETA	11-17-22 800

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176620
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-17-22 Opened on 11-17-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A ~~Foam Box~~ Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____ Yes (No)
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No (NA)
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y)N), # of containers (Y)N), and sample type of grab/comp (Y)N)? (time) 11-17-22
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420IG (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176620

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

December 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176620-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176620-1

		Sample Name:	TRIP BLANK_206				MW-109S_111522			
		Lab Sample ID:	2401766201				2401766202			
		Sample Date:	11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

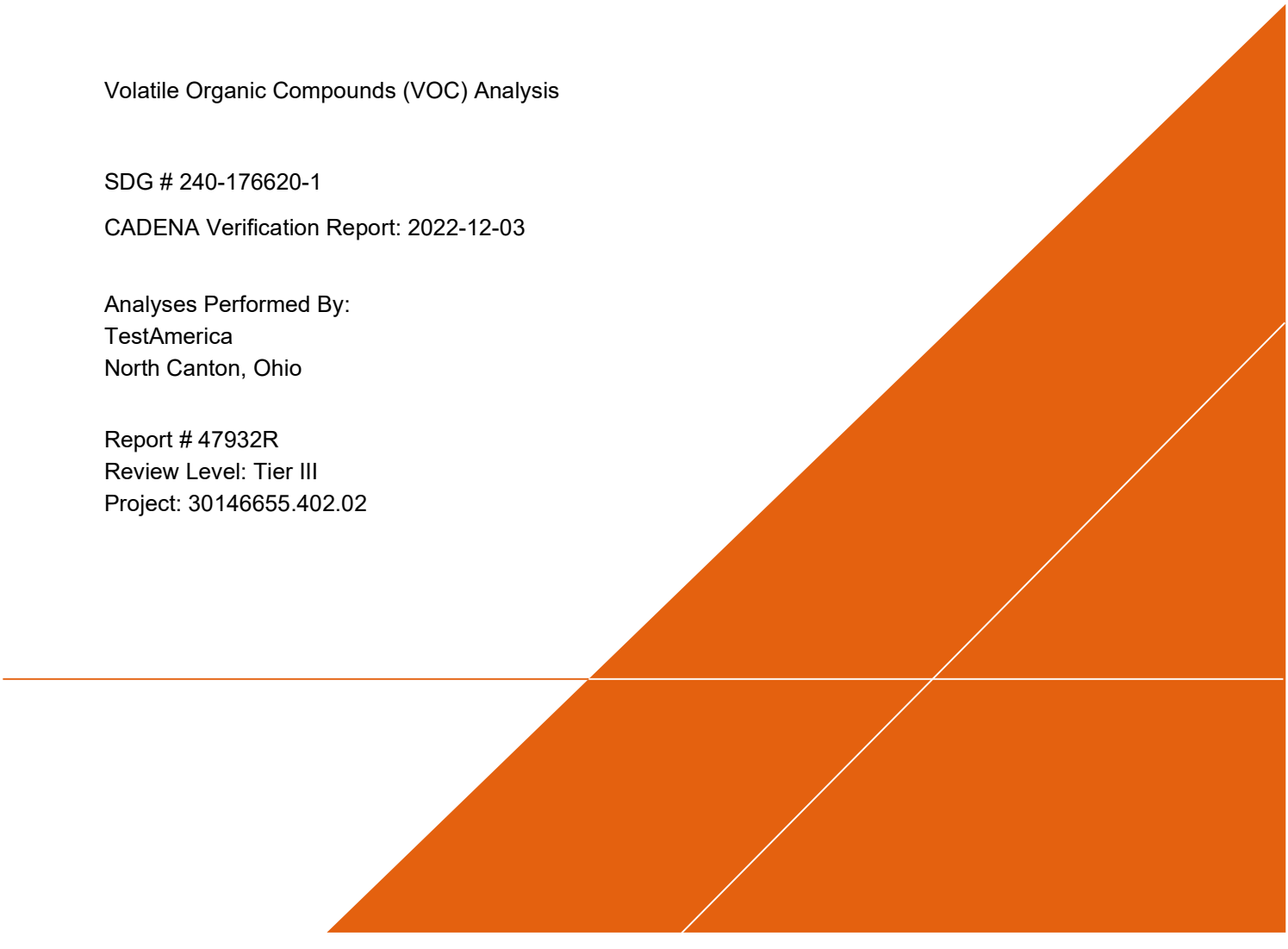
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176620-1

CADENA Verification Report: 2022-12-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47932R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176620-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_206	240-176620-1	Water	11/15/2022		X	
MW-109S_111522	240-176620-2	Water	11/15/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 14, 2022

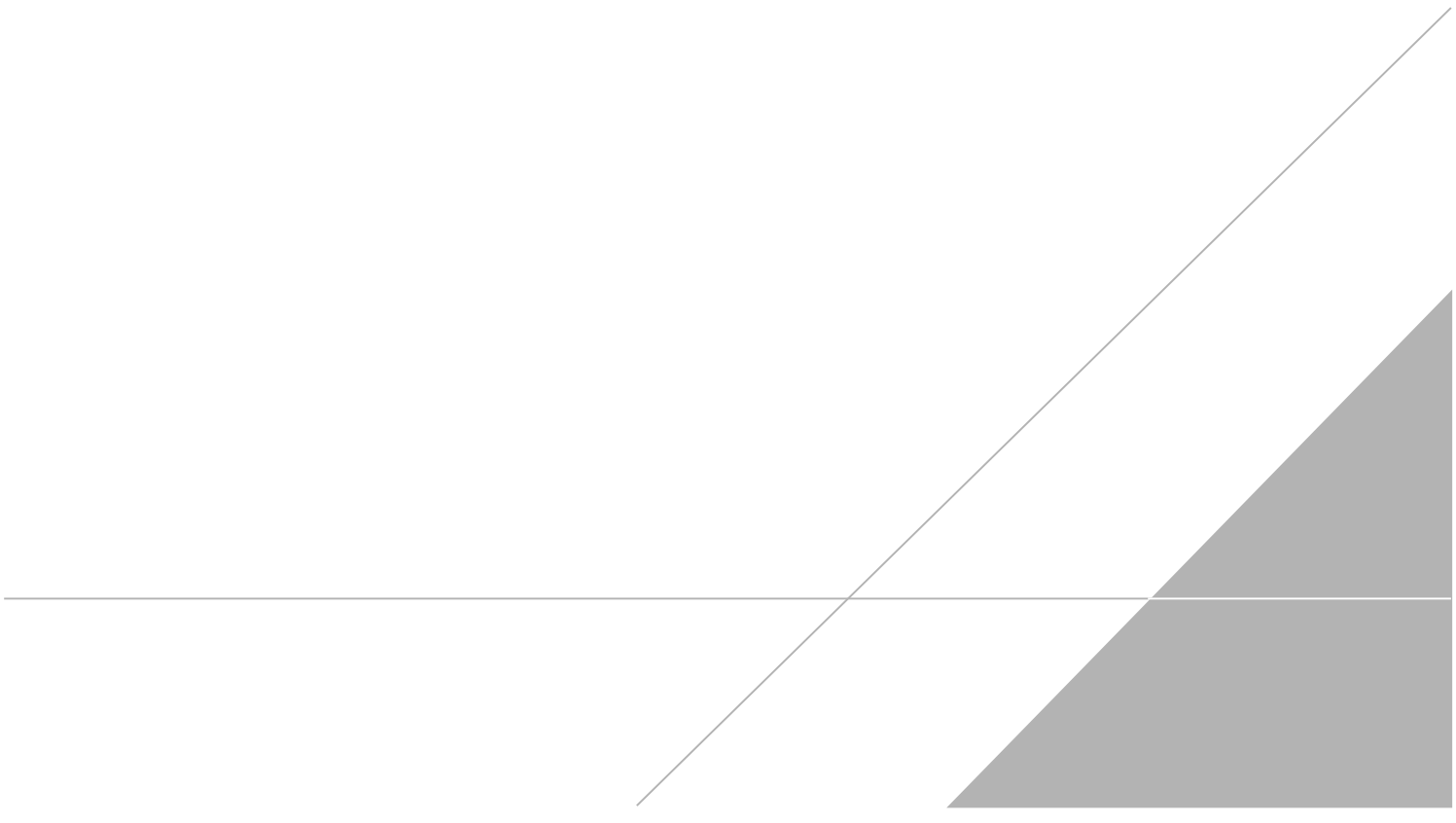
PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
c TRIP BLANK_206	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
o MW-109S-111522	11/15/22	1220		6						6					N	G	X	X	X	X	X	X	^	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176620 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 54998 Beacon side yard
Submit all results through Cadena at jlomolia@cadenaco.com Cadena #E20363
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/15/22 1325	Arcadis Cold St.	Arcadis	11/15/22 1325
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/16/22 1035		EETA	11/16/22 1035
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/16/22 10:40	Rachelle Arnold	EETA	11-17-22 800

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Client Sample ID: TRIP BLANK_206
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176620-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/25/22 13:53*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 13:53*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/25/22 13:53*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/25/22 13:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176620-1

Client Sample ID: MW-109S_111522
Date Collected: 11/15/22 12:20
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176620-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/28/22 14:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 18:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 18:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 18:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 18:04*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/25/22 18:04*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/25/22 18:04*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/25/22 18:04*	*1*

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/6/2022 2:39:19 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176839-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Eurofins Canton

Job Notes

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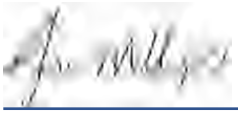
Authorization



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176839-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176839-1

Receipt

The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.1°C

GC/MS VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176839-1	TRIP BLANK_176	Water	11/17/22 00:00	11/19/22 08:00
240-176839-2	MW-181S_111722	Water	11/17/22 10:36	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Client Sample ID: TRIP BLANK_176 — Lab Sample ID: 240-176839-1

No Detections.

Client Sample ID: MW-181S_111722 — Lab Sample ID: 240-176839-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Client Sample ID: TRIP BLANK_176

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176839-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 00:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 00:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 00:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 00:33*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 00:33*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 00:33*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 00:33*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Client Sample ID: MW-181S_111722
Date Collected: 11/17/22 10:36
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176839-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 22:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/28/22 22:58*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 04:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 04:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 04:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 04:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 04:47*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 04:47*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 04:47*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 04:47*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176837-F-2 MS	Matrix Spike	83	100	105	97
240-176837-F-2 MSD	Matrix Spike Duplicate	83	100	104	97
240-176839-1	TRIP BLANK_176	92	100	103	98
240-176839-2	MW-181S_111722	91	100	103	98
LCS 240-553655/3	Lab Control Sample	83	100	105	98
MB 240-553655/4	Method Blank	91	101	104	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
240-176839-2	MW-181S_111722	104
LCS 240-553632/3	Lab Control Sample	96
MB 240-553632/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553655/4
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 19:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 19:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/28/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/28/22 19:21*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/28/22 19:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/28/22 19:21*	*1*

Lab Sample ID: LCS 240-553655/3
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	23.9		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	22.6		ug/L		91	70 - 122
Vinyl chloride	25.0	26.1		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	31.4		ug/L		126	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	24.6		ug/L		98	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176837-F-2 MS
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176837-F-2 MSD
Matrix: Water
Analysis Batch: 553655

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.8		ug/L		119	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	24.8		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	5	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	3	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/28/22 16:04*	*1*

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176839-2	MW-181S_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176839-1	TRIP BLANK_176	Total/NA	Water	8260D	
240-176839-2	MW-181S_111722	Total/NA	Water	8260D	
MB 240-553655/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553655/3	Lab Control Sample	Total/NA	Water	8260D	
240-176837-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176837-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Client Sample ID: TRIP BLANK_176

Lab Sample ID: 240-176839-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 00:33

Client Sample ID: MW-181S_111722

Lab Sample ID: 240-176839-2

Date Collected: 11/17/22 10:36

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553655	CS	EET CAN	11/29/22 04:47
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/28/22 22:58

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below 10 day ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ace / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 176	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1815_ 111722	11/17/22	10:36		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34990 Wadsworth
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Gary Schafer	Arcadis	11/17/22 1620	Khyi Cold Storage	Arcadis	11/17/22 1620
Relinquished by:	ARCADIS	11/18/22 0945		EETA	11/18/22 0945
Relinquished by: J. Hall	EETA	11-18-22 1002	Received in Laboratory by: M. A. L.	EEC	11/19/22 800

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176839
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. A. A.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Y/N) 11-21-22
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176839-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176839-1

		Sample Name:	TRIP BLANK_176				MW-181S_111722			
		Lab Sample ID:	2401768391				2401768392			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

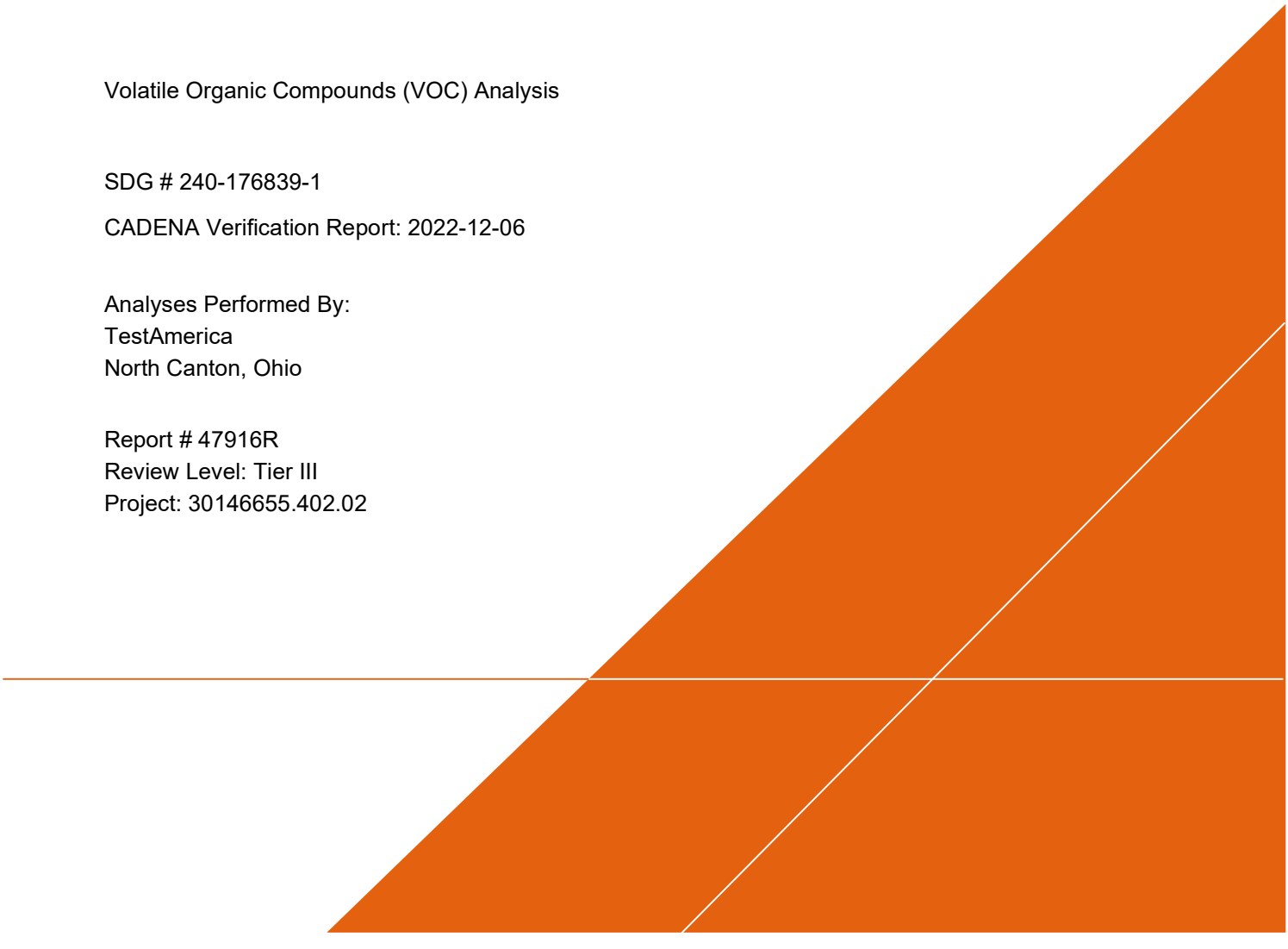
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176839-1

CADENA Verification Report: 2022-12-06

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47916R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176839-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_176	240-176839-1	Water	11/17/2022		X	
MW-181S_111722	240-176839-2	Water	11/17/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_176 MW-181S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	+30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 12, 2022

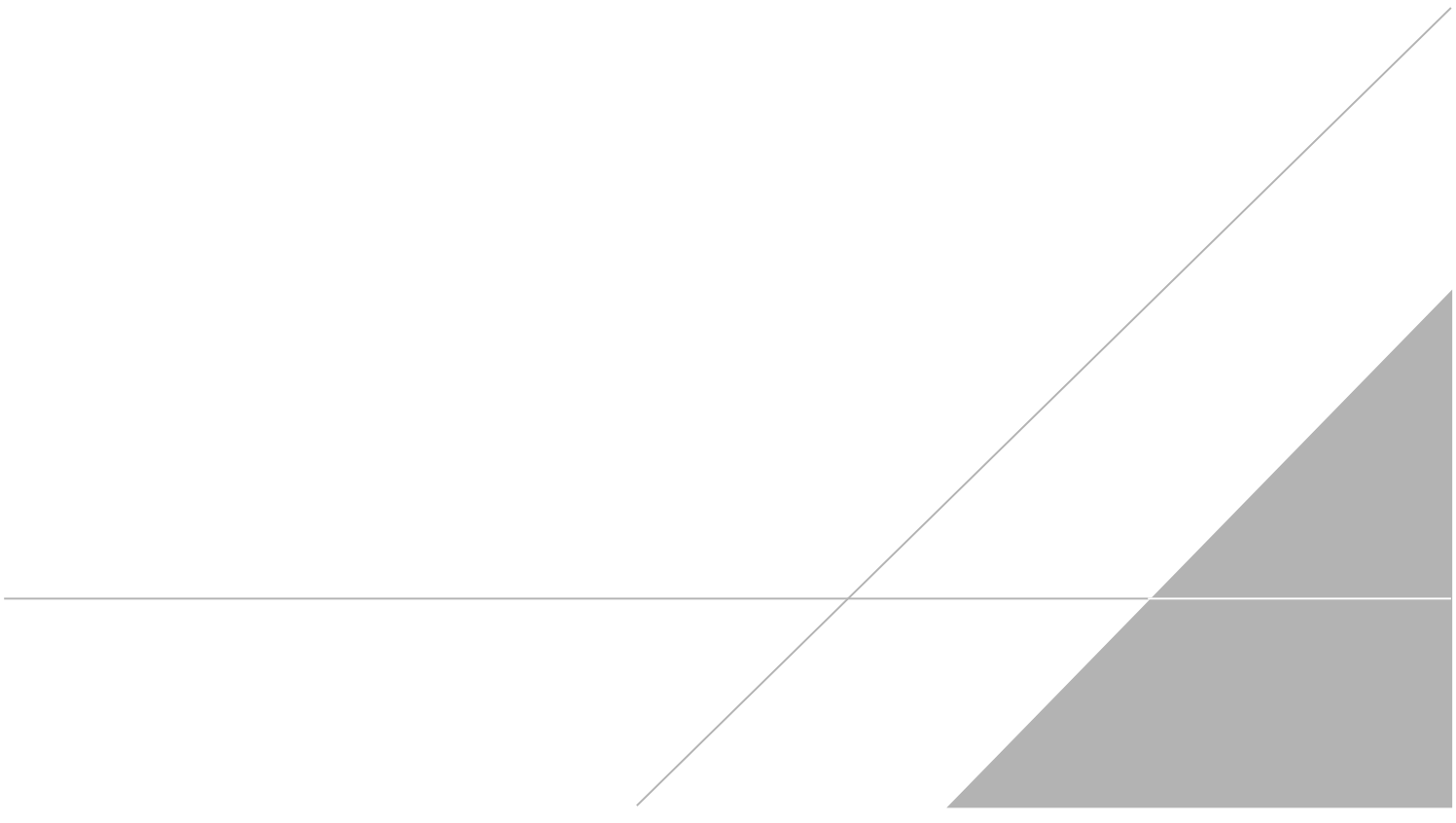
PEER REVIEW: Andrew Korycinski

DATE: December 13, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Gary Schafer	TAT if different from below		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:	10 day ☑ 2 weeks ☐ 3 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ace / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 176	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1815_ 111722	11/17/22	10:36		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176839 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For [ ] Months

Special Instructions/QC Requirements & Comments:
Sample Address: 34990 Wadsworth
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	11/17/22 1620	Mbyi Cold Storage	Arcadis	11/17/22 1620
	ARCADIS	11/18/22 0945	J. Hall	EEA	11/18/22 0945
J. Hall	EEA	11-18-22 1002	M. A-L.	EEC	11/19/22 800

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12/6/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Client Sample ID: TRIP BLANK_176

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176839-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 00:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 00:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 00:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 00:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 00:33*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 00:33*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 00:33*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 00:33*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176839-1

Client Sample ID: MW-181S_111722
Date Collected: 11/17/22 10:36
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176839-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 22:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/28/22 22:58*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 04:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 04:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 04:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 04:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 04:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 04:47*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 04:47*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 04:47*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 04:47*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/18/2022 8:12:52 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176029-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Job ID: 240-176029-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176029-1

Receipt
The samples were received on 11/8/2022 10:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.0°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-552054 recovered above the upper control limit for 1,1-Dichloroethene. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_38 (240-176029-1), MW-223S_110422 (240-176029-2), (CCV 240-552054/4), (CCVIS 240-552054/3), (LCS 240-552054/5), (LCS 240-552054/6), (MB 240-552054/8), (240-176033-B-2), (240-176033-F-2 MS) and (240-176033-L-2 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176029-1	TRIP BLANK_38	Water	11/04/22 00:00	11/08/22 10:50
240-176029-2	MW-223S_110422	Water	11/04/22 11:30	11/08/22 10:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Client Sample ID: TRIP BLANK_38 — Lab Sample ID: 240-176029-1

No Detections.

Client Sample ID: MW-223S_110422 — Lab Sample ID: 240-176029-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Client Sample ID: TRIP BLANK_38
Date Collected: 11/04/22 00:00
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176029-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/15/22 15:27*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/15/22 15:27*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/15/22 15:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Client Sample ID: MW-223S_110422
Date Collected: 11/04/22 11:30
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176029-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/15/22 01:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 20:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 20:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 20:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/15/22 20:56*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/15/22 20:56*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/15/22 20:56*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 20:56*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176029-1	TRIP BLANK_38	101	83	94	99
240-176029-2	MW-223S_110422	106	77	94	103
240-176033-F-2 MS	Matrix Spike	92	99	98	94
240-176033-L-2 MSD	Matrix Spike Duplicate	90	97	96	92
LCS 240-552054/5	Lab Control Sample	90	94	97	93
MB 240-552054/8	Method Blank	101	81	96	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175884-G-2 MS	Matrix Spike	110
240-175884-M-2 MSD	Matrix Spike Duplicate	112
240-176029-2	MW-223S_110422	114
LCS 240-551906/3	Lab Control Sample	105
MB 240-551906/4	Method Blank	120

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552054/8
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/15/22 15:02*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/15/22 15:02*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/15/22 15:02*	*1*

Lab Sample ID: LCS 240-552054/5
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.0		ug/L		108	63 - 134
cis-1,2-Dichloroethene	25.0	26.5		ug/L		106	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.3		ug/L		105	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122
Vinyl chloride	12.5	10.4		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176033-F-2 MS
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.8		ug/L		111	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	25.0	24.9		ug/L		100	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 136
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176033-F-2 MS
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176033-L-2 MSD
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.9		ug/L		112	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 136	4	15
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124	2	15
Vinyl chloride	1.0	U	12.5	9.93		ug/L		79	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551906/4
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*120*		*66 - 120*		*11/14/22 18:27*	*1*

Lab Sample ID: LCS 240-551906/3
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.69		ug/L		97	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-175884-G-2 MS
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*

Lab Sample ID: 240-175884-M-2 MSD
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

GC/MS VOA

Analysis Batch: 551906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176029-2	MW-223S_110422	Total/NA	Water	8260D SIM	
MB 240-551906/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551906/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175884-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175884-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176029-1	TRIP BLANK_38	Total/NA	Water	8260D	
240-176029-2	MW-223S_110422	Total/NA	Water	8260D	
MB 240-552054/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552054/5	Lab Control Sample	Total/NA	Water	8260D	
240-176033-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176033-L-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Client Sample ID: TRIP BLANK_38

Lab Sample ID: 240-176029-1

Date Collected: 11/04/22 00:00

Matrix: Water

Date Received: 11/08/22 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 15:27

Client Sample ID: MW-223S_110422

Lab Sample ID: 240-176029-2

Date Collected: 11/04/22 11:30

Matrix: Water

Date Received: 11/08/22 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 20:56
Total/NA	Analysis	8260D SIM		1	551906	CS	EET CAN	11/15/22 01:22

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176029-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_38	11/4/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2235-110422	11/4/22	11:30		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176029 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 35000 Plymouth Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/4/22 16:55	Novi cold Storage	Arcadis	11/4/22 16:55
[illegible]	ARCADIS	11/7/22 / 1000	[illegible]	EEA	11/7/22 / 1000
[illegible]	EEA	11/7/22 1002	Mandalyn Bleck	TAL	11-8-22 10:50

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11/18/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176029
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-8-22 Opened on 11-8-22

Cooler unpacked by: Mandaly

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # elm Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.0 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 19, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176029-1
Sample date: 2022-11-04
Report received by CADENA: 2022-11-18
Initial Data Verification completed by CADENA: 2022-11-19
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176029-1

		Sample Name:	TRIP BLANK_38				MW-223S_110422			
		Lab Sample ID:	2401760291				2401760292			
		Sample Date:	11/4/2022				11/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

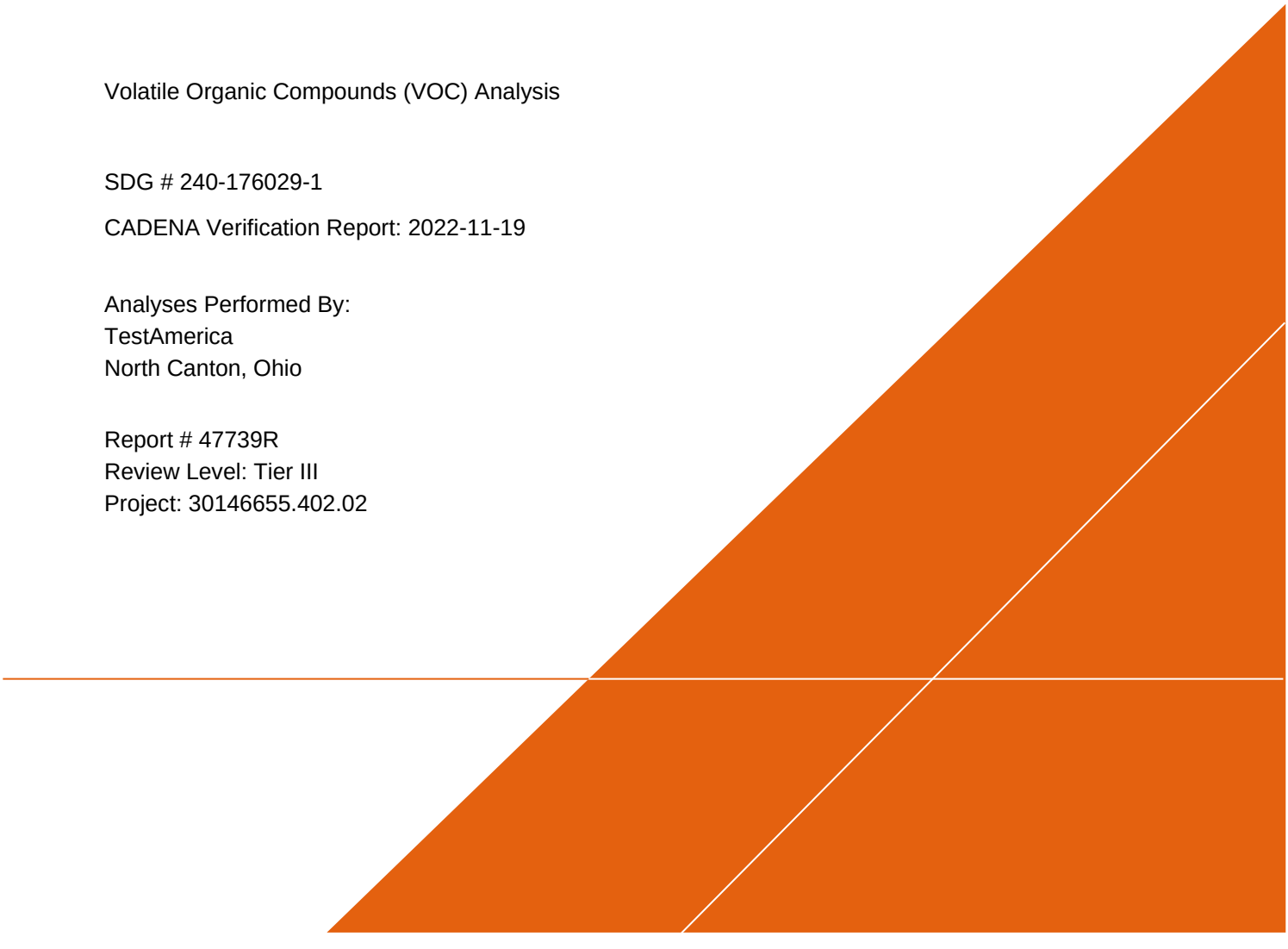
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176029-1

CADENA Verification Report: 2022-11-19

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47739R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176029-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_38	240-176029-1	Water	11/04/22		X	
MW-223S_110422	240-176029-2	Water	11/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_38 MW-223S_110422	Continuous Calibration Verification %D	1,1-Dichloroethene	+20.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 29, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_38	11/4/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-223S-110422	11/4/22	11:30		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176029 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: 35000 Plymouth Rd

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/4/22 16:55	NOVI cold Storage	Arcadis	11/4/22 16:55
[signature]	ARCADIS	11/7/22 / 1000	[signature]	EEA	11/7/22 / 1000
[signature]	EEA	11/7/22 1002	Received in Laboratory by: [signature]	TAL	11-8-22 10:50

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Client Sample ID: TRIP BLANK_38
Lab Sample ID: 240-176029-1
Date Collected: 11/04/22 00:00
Matrix: Water
Date Received: 11/08/22 10:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/15/22 15:27*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/15/22 15:27*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/15/22 15:27*	*1*

Client Sample ID: MW-223S_110422
Lab Sample ID: 240-176029-2
Date Collected: 11/04/22 11:30
Matrix: Water
Date Received: 11/08/22 10:50

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/15/22 01:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 20:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 20:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 20:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/15/22 20:56*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/15/22 20:56*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/15/22 20:56*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 20:56*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 8:15:15 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175703-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-175703-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175703-1

Receipt
The samples were received on 11/2/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.9°C and 1.0°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175703-1	TRIP BLANK_72	Water	10/31/22 00:00	11/02/22 09:30
240-175703-2	MW-86S_103122	Water	10/31/22 10:20	11/02/22 09:30
240-175703-3	MW-86_103122	Water	10/31/22 11:20	11/02/22 09:30
240-175703-4	MW-96S_103122	Water	10/31/22 12:15	11/02/22 09:30
240-175703-5	MW-97S_103122	Water	10/31/22 13:35	11/02/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Client Sample ID: TRIP BLANK_72 — Lab Sample ID: 240-175703-1

No Detections.

Client Sample ID: MW-86S_103122 — Lab Sample ID: 240-175703-2

No Detections.

Client Sample ID: MW-86_103122 — Lab Sample ID: 240-175703-3

No Detections.

Client Sample ID: MW-96S_103122 — Lab Sample ID: 240-175703-4

No Detections.

Client Sample ID: MW-97S_103122 — Lab Sample ID: 240-175703-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Client Sample ID: TRIP BLANK_72
Date Collected: 10/31/22 00:00
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 15:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 15:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 15:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/09/22 15:30*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/09/22 15:30*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/22 15:30*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 15:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Client Sample ID: MW-86S_103122

Date Collected: 10/31/22 10:20
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-2

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 13:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/07/22 13:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/09/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/22 15:53*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/09/22 15:53*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 15:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Client Sample ID: MW-86_103122
Date Collected: 10/31/22 11:20
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 13:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/07/22 13:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 16:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 16:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 16:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/22 16:16*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 16:16*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 16:16*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/22 16:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Client Sample ID: MW-96S_103122
Date Collected: 10/31/22 12:15
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 14:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/07/22 14:00*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 16:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 16:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/22 16:39*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/09/22 16:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/09/22 16:39*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/22 16:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Client Sample ID: MW-97S_103122
Date Collected: 10/31/22 13:35
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 14:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/07/22 14:24*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 17:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 17:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 17:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/22 17:02*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/09/22 17:02*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/22 17:02*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/09/22 17:02*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175697-B-5 MS	Matrix Spike	96	94	101	97
240-175697-E-5 MSD	Matrix Spike Duplicate	92	87	93	93
240-175703-1	TRIP BLANK_72	97	81	94	96
240-175703-2	MW-86S_103122	97	78	91	96
240-175703-3	MW-86_103122	100	79	93	97
240-175703-4	MW-96S_103122	102	86	98	99
240-175703-5	MW-97S_103122	102	82	94	101
LCS 240-551098/5	Lab Control Sample	97	95	98	98
MB 240-551098/8	Method Blank	96	79	92	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175697-I-5 MS	Matrix Spike	121 S1+
240-175697-O-5 MSD	Matrix Spike Duplicate	108
240-175703-2	MW-86S_103122	104
240-175703-3	MW-86_103122	108
240-175703-4	MW-96S_103122	105
240-175703-5	MW-97S_103122	101
LCS 240-550618/3	Lab Control Sample	89
MB 240-550618/4	Method Blank	117

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551098/8
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 11:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 11:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 11:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 11:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 11:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 11:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/09/22 11:25*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 11:25*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/09/22 11:25*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/09/22 11:25*	*1*

Lab Sample ID: LCS 240-551098/5
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.3		ug/L		101	63 - 134
cis-1,2-Dichloroethene	20.0	19.7		ug/L		99	77 - 123
Tetrachloroethene	20.0	22.6		ug/L		113	76 - 123
trans-1,2-Dichloroethene	20.0	18.3		ug/L		92	75 - 124
Trichloroethene	20.0	20.6		ug/L		103	70 - 122
Vinyl chloride	20.0	16.8		ug/L		84	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-175697-B-5 MS
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	20.0	18.2		ug/L		91	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.0		ug/L		80	56 - 136
Trichloroethene	1.0	U	20.0	17.3		ug/L		87	61 - 124
Vinyl chloride	1.0	U	20.0	14.5		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175697-B-5 MS
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	97		73 - 120

Lab Sample ID: 240-175697-E-5 MSD
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	16.9		ug/L		84	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128	4	14
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	15.8		ug/L		79	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	16.6		ug/L		83	43 - 157	13	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		62 - 137
4-Bromofluorobenzene (Surr)	87		56 - 136
Toluene-d8 (Surr)	93		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-550618/4
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 07:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		66 - 120		11/07/22 07:31	1

Lab Sample ID: LCS 240-550618/3
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		66 - 120

Lab Sample ID: 240-175697-I-5 MS
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U F1 F2	10.0	11.2		ug/L		112	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*

Lab Sample ID: 240-175697-O-5 MSD
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U F1 F2	10.0	9.45	F2	ug/L		95	51 - 153	17	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

GC/MS VOA

Analysis Batch: 550618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175703-2	MW-86S_103122	Total/NA	Water	8260D SIM	
240-175703-3	MW-86_103122	Total/NA	Water	8260D SIM	
240-175703-4	MW-96S_103122	Total/NA	Water	8260D SIM	
240-175703-5	MW-97S_103122	Total/NA	Water	8260D SIM	
MB 240-550618/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-550618/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175697-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175697-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175703-1	TRIP BLANK_72	Total/NA	Water	8260D	
240-175703-2	MW-86S_103122	Total/NA	Water	8260D	
240-175703-3	MW-86_103122	Total/NA	Water	8260D	
240-175703-4	MW-96S_103122	Total/NA	Water	8260D	
240-175703-5	MW-97S_103122	Total/NA	Water	8260D	
MB 240-551098/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551098/5	Lab Control Sample	Total/NA	Water	8260D	
240-175697-B-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-175697-E-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Client Sample ID: TRIP BLANK_72
Date Collected: 10/31/22 00:00
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 15:30

Client Sample ID: MW-86S_103122
Date Collected: 10/31/22 10:20
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 15:53
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 13:11

Client Sample ID: MW-86_103122
Date Collected: 10/31/22 11:20
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 16:16
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 13:35

Client Sample ID: MW-96S_103122
Date Collected: 10/31/22 12:15
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 16:39
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 14:00

Client Sample ID: MW-97S_103122
Date Collected: 10/31/22 13:35
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175703-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 17:02
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 14:24

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175703-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christen Garrido	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_72		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-865_103122	10/31/22	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B
MW-86_103122		1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B SIM
MW-965_103122		1215		6						6					N	G	X	X	X	X	X	X	X	
MW-975_103122		1335		6						6					N	G	X	X	X	X	X	X	X	

240-175703 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Wadsworth + Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christen Garrido	Arcadis	10/31/22 1430	Novi Cold Storage	Arcadis	10/31/22 1430
Jommel Guy	Arcadis	11/1/22 1255		EETA	11/1/22 12:50
	EETA	11/1/22 1255		EETNC	11-2-22 0730

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11/16/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 175703
Barberton Facility

Client Arcadis Site Name LTP

Cooler unpacked by: ame

Cooler Received on 11-2-22 Opened on 11-2-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. ____°C Corrected Cooler Temp. ____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____°C Corrected Cooler Temp. ____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. (Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B226901 VB (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) FB 1x40mL were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login # : 175703

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.3	1.0	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2022 8:15:15 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 16, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175703-1
Sample date: 2022-10-31
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-16
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC MS surrogate recovery and RPD outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

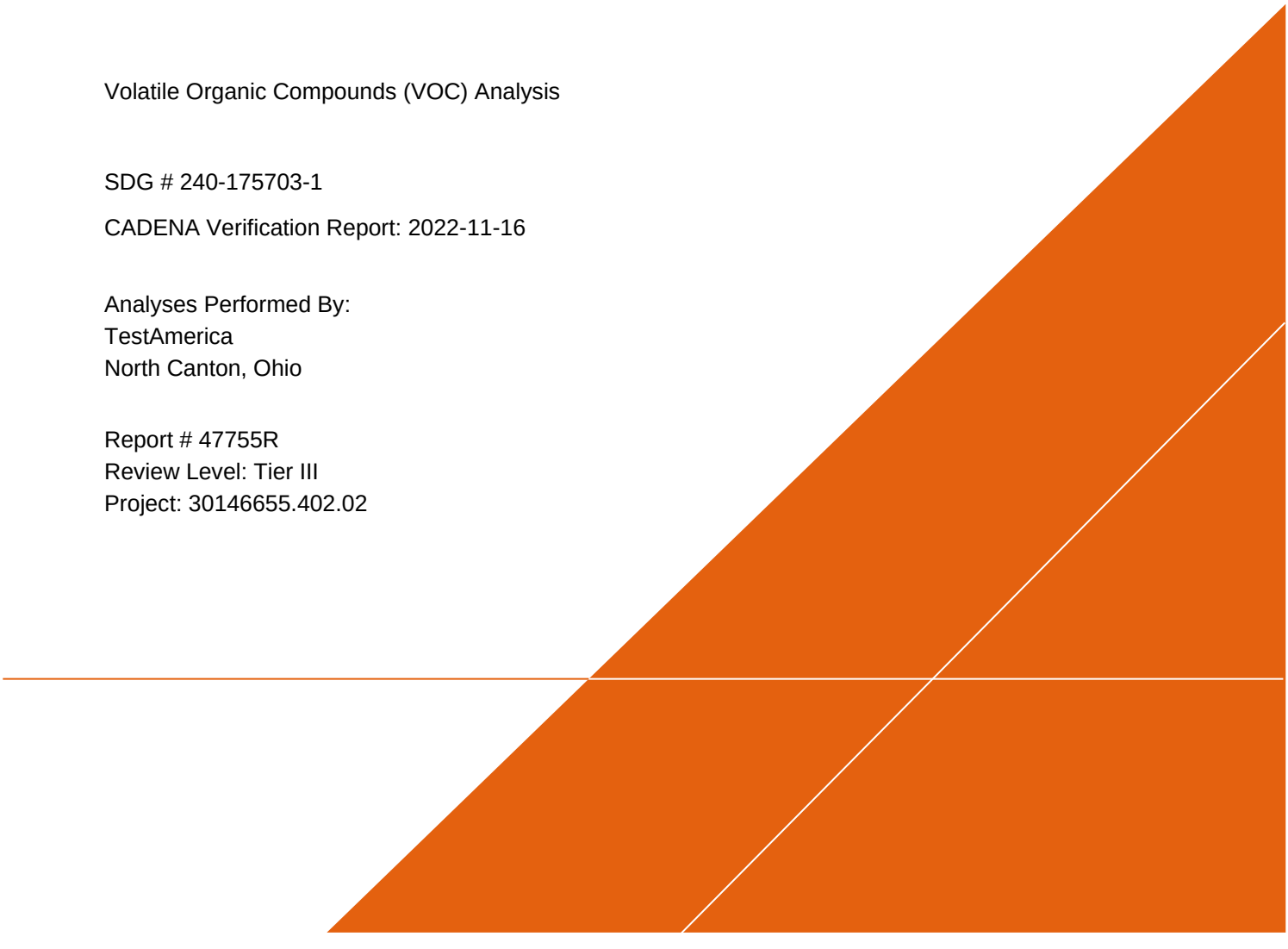
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175703-1

CADENA Verification Report: 2022-11-16

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47755R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175703-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_72	240-175703-1	Water	10/31/22		X	
MW-86S_103122	240-175703-2	Water	10/31/22		X	X
MW-86_103122	240-175703-3	Water	10/31/22		X	X
MW-96S_103122	240-175703-4	Water	10/31/22		X	X
MW-97S_103122	240-175703-5	Water	10/31/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christen Gaw Ido	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling; Job/SDG No:
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_72		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-865_103122	10/31/22	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-86_103122		1120		6						6					N	G	X	X	X	X	X	X	X	
MW-965_103122		1215		6						6					N	G	X	X	X	X	X	X	X	
MW-975_103122		1335		6						6					N	G	X	X	X	X	X	X	X	

240-175703 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: Wadsworth + Boston Post ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christen Gaw	Arcadis	10/31/22 1430	Novi Cold Storage	Arcadis	10/31/22 1430
Jonmer Guy	Arcadis	11/1/22 1255		EETA	11/1/22 12:50
	EETA	11/1/22 12:55	Received in Laboratory by:	EETNC	11-2-22 0530

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Client Sample ID: TRIP BLANK_72

Lab Sample ID: 240-175703-1

Date Collected: 10/31/22 00:00
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 15:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 15:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 15:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/09/22 15:30*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/09/22 15:30*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/22 15:30*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 15:30*	*1*

Client Sample ID: MW-86S_103122

Lab Sample ID: 240-175703-2

Date Collected: 10/31/22 10:20
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 13:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/07/22 13:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/09/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/09/22 15:53*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/09/22 15:53*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 15:53*	*1*

Client Sample ID: MW-86_103122

Lab Sample ID: 240-175703-3

Date Collected: 10/31/22 11:20
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 13:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/07/22 13:35*	*1*

Client Sample ID: MW-86_103122

Lab Sample ID: 240-175703-3

Date Collected: 10/31/22 11:20

Matrix: Water

Date Received: 11/02/22 09:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 16:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 16:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 16:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/22 16:16*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 16:16*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 16:16*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/22 16:16*	*1*

Client Sample ID: MW-96S_103122

Lab Sample ID: 240-175703-4

Date Collected: 10/31/22 12:15

Matrix: Water

Date Received: 11/02/22 09:30

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 14:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/07/22 14:00*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 16:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 16:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 16:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/22 16:39*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/09/22 16:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/09/22 16:39*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/22 16:39*	*1*

Client Sample ID: MW-97S_103122

Lab Sample ID: 240-175703-5

Date Collected: 10/31/22 13:35

Matrix: Water

Date Received: 11/02/22 09:30

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 14:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/07/22 14:24*	*1*

Client Sample ID: MW-97S_103122
Lab Sample ID: 240-175703-5

Date Collected: 10/31/22 13:35
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 17:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 17:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 17:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/09/22 17:02*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/09/22 17:02*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/09/22 17:02*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/09/22 17:02*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 8:15:57 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175707-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-175707-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175707-1

Receipt
The samples were received on 11/2/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.9°C and 1.0°C

GC/MS VOA
Method 8260D_SIM: The MS/MSD for analytical batch 240-550818 was not analyzed due to an instrument fault: MW-102_103122 (240-175707-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175707-1	TRIP BLANK_35	Water	10/31/22 00:00	11/02/22 09:30
240-175707-2	MW-102_103122	Water	10/31/22 11:20	11/02/22 09:30
240-175707-3	MW-102S_103122	Water	10/31/22 12:22	11/02/22 09:30
240-175707-4	MW-105S_103122	Water	10/31/22 13:29	11/02/22 09:30
240-175707-5	MW-132S_103122	Water	10/31/22 15:42	11/02/22 09:30
240-175707-6	MW-131S_103122	Water	10/31/22 14:36	11/02/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: TRIP BLANK_35 — Lab Sample ID: 240-175707-1

No Detections.

Client Sample ID: MW-102_103122 — Lab Sample ID: 240-175707-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-102S_103122 — Lab Sample ID: 240-175707-3

No Detections.

Client Sample ID: MW-105S_103122 — Lab Sample ID: 240-175707-4

No Detections.

Client Sample ID: MW-132S_103122 — Lab Sample ID: 240-175707-5

No Detections.

Client Sample ID: MW-131S_103122 — Lab Sample ID: 240-175707-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.61	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: TRIP BLANK_35
Date Collected: 10/31/22 00:00
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175707-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 17:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/09/22 17:25*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/09/22 17:25*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 17:25*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 17:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: MW-102_103122
Date Collected: 10/31/22 11:20
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175707-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*		*11/07/22 22:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 17:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 17:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 17:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:48	1
Vinyl chloride	**2.2**		1.0	0.45	ug/L			11/09/22 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/09/22 17:48*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/09/22 17:48*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 17:48*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/22 17:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: MW-102S_103122
Date Collected: 10/31/22 12:22
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175707-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/07/22 15:12*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 18:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 18:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 18:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/22 18:11*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 18:11*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 18:11*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/22 18:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: MW-105S_103122
Date Collected: 10/31/22 13:29
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175707-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/07/22 15:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 18:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 18:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 18:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/09/22 18:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 18:34*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 18:34*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 18:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: MW-132S_103122

Date Collected: 10/31/22 15:42
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175707-5

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 16:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/07/22 16:01*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 18:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 18:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 18:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/22 18:57*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/09/22 18:57*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/09/22 18:57*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/22 18:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: MW-131S_103122
Date Collected: 10/31/22 14:36
Date Received: 11/02/22 09:30

Lab Sample ID: 240-175707-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/07/22 16:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 19:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 19:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 19:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 19:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 19:20	1
Vinyl chloride	**0.61**	**J**	1.0	0.45	ug/L			11/09/22 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/09/22 19:20*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/09/22 19:20*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/09/22 19:20*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/22 19:20*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175697-B-5 MS	Matrix Spike	96	94	101	97
240-175697-E-5 MSD	Matrix Spike Duplicate	92	87	93	93
240-175707-1	TRIP BLANK_35	99	80	93	96
240-175707-2	MW-102_103122	98	80	93	97
240-175707-3	MW-102S_103122	101	79	93	99
240-175707-4	MW-105S_103122	99	79	93	96
240-175707-5	MW-132S_103122	100	83	95	99
240-175707-6	MW-131S_103122	98	76	91	97
LCS 240-551098/5	Lab Control Sample	97	95	98	98
MB 240-551098/8	Method Blank	96	79	92	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175697-I-5 MS	Matrix Spike	121 S1+
240-175697-O-5 MSD	Matrix Spike Duplicate	108
240-175707-2	MW-102_103122	110
240-175707-3	MW-102S_103122	117
240-175707-4	MW-105S_103122	106
240-175707-5	MW-132S_103122	108
240-175707-6	MW-131S_103122	104
LCS 240-550618/3	Lab Control Sample	89
LCS 240-550818/3	Lab Control Sample	100
MB 240-550618/4	Method Blank	117
MB 240-550818/4	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551098/8
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 11:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 11:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 11:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 11:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 11:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 11:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/09/22 11:25*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 11:25*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/09/22 11:25*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/09/22 11:25*	*1*

Lab Sample ID: LCS 240-551098/5
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.3		ug/L		101	63 - 134
cis-1,2-Dichloroethene	20.0	19.7		ug/L		99	77 - 123
Tetrachloroethene	20.0	22.6		ug/L		113	76 - 123
trans-1,2-Dichloroethene	20.0	18.3		ug/L		92	75 - 124
Trichloroethene	20.0	20.6		ug/L		103	70 - 122
Vinyl chloride	20.0	16.8		ug/L		84	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-175697-B-5 MS
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	20.0	18.2		ug/L		91	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.0		ug/L		80	56 - 136
Trichloroethene	1.0	U	20.0	17.3		ug/L		87	61 - 124
Vinyl chloride	1.0	U	20.0	14.5		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175697-B-5 MS
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-175697-E-5 MSD
Matrix: Water
Analysis Batch: 551098

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	16.9		ug/L		84	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128	4	14
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	15.8		ug/L		79	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.4		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	16.6		ug/L		83	43 - 157	13	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-550618/4
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 07:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/07/22 07:31*	*1*

Lab Sample ID: LCS 240-550618/3
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-175697-I-5 MS
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U F1 F2	10.0	11.2		ug/L		112	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*

Lab Sample ID: 240-175697-O-5 MSD
Matrix: Water
Analysis Batch: 550618

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U F1 F2	10.0	9.45	F2	ug/L		95	51 - 153	17	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*

Lab Sample ID: MB 240-550818/4
Matrix: Water
Analysis Batch: 550818

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 20:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/07/22 20:37*	*1*

Lab Sample ID: LCS 240-550818/3
Matrix: Water
Analysis Batch: 550818

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.0		ug/L		100	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

GC/MS VOA

Analysis Batch: 550618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175707-3	MW-102S_103122	Total/NA	Water	8260D SIM	
240-175707-4	MW-105S_103122	Total/NA	Water	8260D SIM	
240-175707-5	MW-132S_103122	Total/NA	Water	8260D SIM	
240-175707-6	MW-131S_103122	Total/NA	Water	8260D SIM	
MB 240-550618/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-550618/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175697-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175697-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 550818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175707-2	MW-102_103122	Total/NA	Water	8260D SIM	
MB 240-550818/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-550818/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 551098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175707-1	TRIP BLANK_35	Total/NA	Water	8260D	
240-175707-2	MW-102_103122	Total/NA	Water	8260D	
240-175707-3	MW-102S_103122	Total/NA	Water	8260D	
240-175707-4	MW-105S_103122	Total/NA	Water	8260D	
240-175707-5	MW-132S_103122	Total/NA	Water	8260D	
240-175707-6	MW-131S_103122	Total/NA	Water	8260D	
MB 240-551098/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551098/5	Lab Control Sample	Total/NA	Water	8260D	
240-175697-B-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-175697-E-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Client Sample ID: TRIP BLANK_35
Lab Sample ID: 240-175707-1
Date Collected: 10/31/22 00:00
Matrix: Water
Date Received: 11/02/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 17:25

Client Sample ID: MW-102_103122
Lab Sample ID: 240-175707-2
Date Collected: 10/31/22 11:20
Matrix: Water
Date Received: 11/02/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 17:48
Total/NA	Analysis	8260D SIM		1	550818	CS	EET CAN	11/07/22 22:15

Client Sample ID: MW-102S_103122
Lab Sample ID: 240-175707-3
Date Collected: 10/31/22 12:22
Matrix: Water
Date Received: 11/02/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 18:11
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 15:12

Client Sample ID: MW-105S_103122
Lab Sample ID: 240-175707-4
Date Collected: 10/31/22 13:29
Matrix: Water
Date Received: 11/02/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 18:34
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 15:37

Client Sample ID: MW-132S_103122
Lab Sample ID: 240-175707-5
Date Collected: 10/31/22 15:42
Matrix: Water
Date Received: 11/02/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 18:57
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 16:01

Client Sample ID: MW-131S_103122
Lab Sample ID: 240-175707-6
Date Collected: 10/31/22 14:36
Matrix: Water
Date Received: 11/02/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551098	AJS	EET CAN	11/09/22 19:20
Total/NA	Analysis	8260D SIM		1	550618	CS	EET CAN	11/07/22 16:25

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175707-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name:	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_35	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-102_103122	10/31/22	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-102S_103122	10/31/22	1222		6						6					N	G	X	X	X	X	X	X	X	
MW-105S_103122	10/31/22	1329		~~5~~ 5						~~5~~ 5					N	G	X	X	X	X	X	X	X	
~~MW-103S_103122~~	~~10/31/22~~	~~1436~~		~~6~~						~~6~~					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X	
MW-132S_103122	10/31/22	1542		6						6					N	G	X	X	X	X	X	X	X	
MW-131S_103122	10/31/22	1436		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati Ave ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

240-175707 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jessica Ferreira	Arcadis	10/31/22 1650	MDH Cold Storage	Arcadis	10/31/22 1650
Jessica Ferreira	Arcadis	11/1/22 1255		KETA	11/1/22 12:50
	KETA	11/1/22 12:55		KETNC	11-2-22 0930

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11/16/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 175707**
Barberton Facility

Client Arcadis Site Name LTP

Cooler Received on 11-2-22 Opened on 11-2-22

Cooler unpacked by: CMP

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. (Yes) (No) NA 11-2-22 CMP
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B226901 VOA (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) 1X40 TB VOA were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WT-NC-099

Login # : 175707

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.3	1.0	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/16/2022 8:15:57 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 16, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175707-1
Sample date: 2022-10-31
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-16
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC MS surrogate recovery and RPD outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175707-1

		Sample Name:	TRIP BLANK_3S				MW-102_103122				MW-102S_103122				MW-105S_103122				MW-132S_103122				MW-131S_103122			
		Lab Sample ID:	2401757071				2401757072				2401757073				2401757074				2401757075				2401757076			
		Sample Date:	10/31/2022				10/31/2022				10/31/2022				10/31/2022				10/31/2022				10/31/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	2.2	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.61	1.0	ug/l	J
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

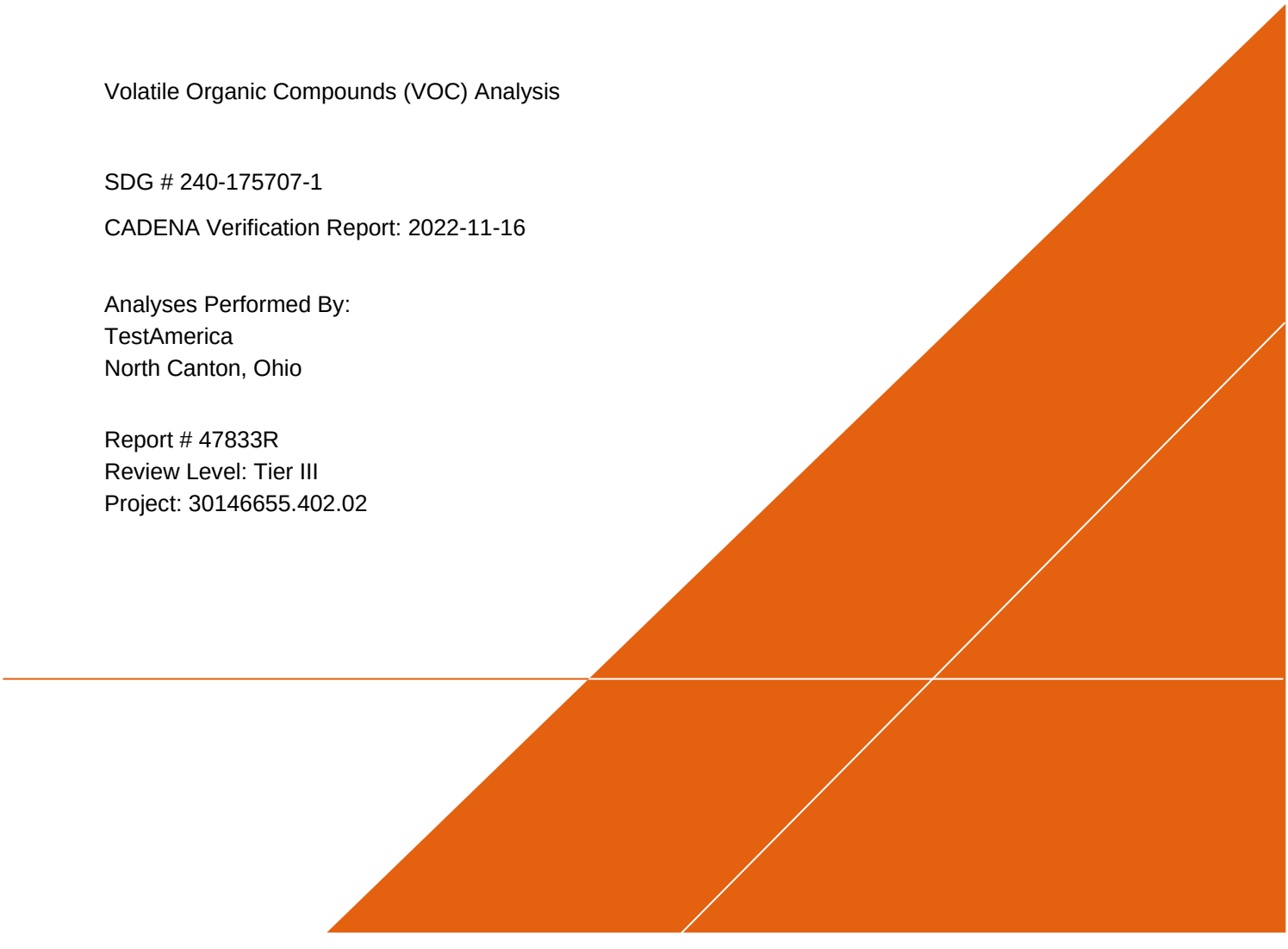
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175707-1

CADENA Verification Report: 2022-11-16

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47833R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175707-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_35	240-175707-1	Water	10/31/22		X	
MW-102_103122	240-175707-2	Water	10/31/22		X	X
MW-102S_103122	240-175707-3	Water	10/31/22		X	X
MW-105S_103122	240-175707-4	Water	10/31/22		X	X
MW-132S_103122	240-175707-5	Water	10/31/22		X	X
MW-131S_103122	240-175707-6	Water	10/31/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 06, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name:	TAT if different from below: 10 day; 3 weeks, 2 weeks (✓), 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_35	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-102_103122	10/31/22	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-102S_103122	10/31/22	1222		6						6					N	G	X	X	X	X	X	X	X	
MW-105S_103122	10/31/22	1329		~~5~~ 5						~~5~~ 5					N	G	X	X	X	X	X	X	X	
~~MW-103S_103122~~	~~10/31/22~~	~~1436~~		~~6~~						~~6~~					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X	
MW-132S_103122	10/31/22	1542		6						6					N	G	X	X	X	X	X	X	X	
MW-131S_103122	10/31/22	1436		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: Rosati Ave ROW
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested

240-175707 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leticia Ferreira	Arcadis	10/31/22 1650	MVL Cold Storage	Arcadis	10/31/22 1650
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jommer Ung	Arcadis	11/1/22 1255		EETA	11/1/22 12:50
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/1/22 12:55		EETNC	11-2-22 0830

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Client Sample ID: TRIP BLANK_35

Lab Sample ID: 240-175707-1

Date Collected: 10/31/22 00:00
Date Received: 11/02/22 09:30

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 17:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/09/22 17:25*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/09/22 17:25*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 17:25*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 17:25*	*1*

Client Sample ID: MW-102_103122

Lab Sample ID: 240-175707-2

Date Collected: 10/31/22 11:20
Date Received: 11/02/22 09:30

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*		*11/07/22 22:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 17:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 17:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 17:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 17:48	1
Vinyl chloride	**2.2**		1.0	0.45	ug/L			11/09/22 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/09/22 17:48*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/09/22 17:48*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 17:48*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/22 17:48*	*1*

Client Sample ID: MW-102S_103122

Lab Sample ID: 240-175707-3

Date Collected: 10/31/22 12:22
Date Received: 11/02/22 09:30

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/07/22 15:12*	*1*

Client Sample ID: MW-102S_103122

Lab Sample ID: 240-175707-3

Date Collected: 10/31/22 12:22
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 18:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 18:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 18:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/09/22 18:11*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 18:11*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 18:11*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/22 18:11*	*1*

Client Sample ID: MW-105S_103122

Lab Sample ID: 240-175707-4

Date Collected: 10/31/22 13:29
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/07/22 15:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 18:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 18:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 18:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/09/22 18:34*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/09/22 18:34*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/09/22 18:34*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/09/22 18:34*	*1*

Client Sample ID: MW-132S_103122

Lab Sample ID: 240-175707-5

Date Collected: 10/31/22 15:42
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 16:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/07/22 16:01*	*1*

Client Sample ID: MW-132S_103122
Lab Sample ID: 240-175707-5

Date Collected: 10/31/22 15:42
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 18:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 18:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 18:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 18:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/09/22 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/09/22 18:57*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/09/22 18:57*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/09/22 18:57*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/09/22 18:57*	*1*

Client Sample ID: MW-131S_103122
Lab Sample ID: 240-175707-6

Date Collected: 10/31/22 14:36
Matrix: Water
Date Received: 11/02/22 09:30

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/07/22 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/07/22 16:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/09/22 19:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/09/22 19:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 19:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/09/22 19:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/09/22 19:20	1
Vinyl chloride	**0.61**	**J**	1.0	0.45	ug/L			11/09/22 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/09/22 19:20*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/09/22 19:20*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/09/22 19:20*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/09/22 19:20*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:10:01 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175787-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Job ID: 240-175787-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175787-1

Receipt
The samples were received on 11/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8°C and 1.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175787-1	TRIP BLANK_48	Water	11/01/22 00:00	11/03/22 09:45
240-175787-2	MW-87_110122	Water	11/01/22 09:05	11/03/22 09:45
240-175787-3	MW-87S_110122	Water	11/01/22 09:50	11/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Client Sample ID: TRIP BLANK_48 — Lab Sample ID: 240-175787-1

No Detections.

Client Sample ID: MW-87_110122 — Lab Sample ID: 240-175787-2

No Detections.

Client Sample ID: MW-87S_110122 — Lab Sample ID: 240-175787-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Client Sample ID: TRIP BLANK_48

Date Collected: 11/01/22 00:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175787-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 15:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 15:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 15:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 15:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/11/22 15:00*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/11/22 15:00*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 15:00*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/22 15:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Client Sample ID: MW-87_110122
Date Collected: 11/01/22 09:05
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175787-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 01:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/12/22 01:17*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/11/22 15:23*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/22 15:23*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/22 15:23*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/22 15:23*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Client Sample ID: MW-87S_110122
Date Collected: 11/01/22 09:50
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175787-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 01:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/12/22 01:41*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 15:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 15:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 15:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/11/22 15:46*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/11/22 15:46*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/11/22 15:46*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 15:46*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175787-1	TRIP BLANK_48	95	82	92	97
240-175787-2	MW-87_110122	93	79	91	93
240-175787-3	MW-87S_110122	99	83	94	96
240-175790-H-5 MS	Matrix Spike	89	87	94	90
240-175790-K-5 MSD	Matrix Spike Duplicate	95	92	98	94
LCS 240-551499/5	Lab Control Sample	90	88	93	95
MB 240-551499/8	Method Blank	94	81	91	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175783-J-3 MS	Matrix Spike	106
240-175783-N-3 MSD	Matrix Spike Duplicate	106
240-175787-2	MW-87_110122	109
240-175787-3	MW-87S_110122	111
LCS 240-551642/3	Lab Control Sample	119
MB 240-551642/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551499/8
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 11:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 11:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 11:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/11/22 11:09*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/11/22 11:09*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/22 11:09*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 11:09*	*1*

Lab Sample ID: LCS 240-551499/5
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.9		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	77 - 123
Tetrachloroethene	20.0	21.9		ug/L		110	76 - 123
trans-1,2-Dichloroethene	20.0	17.9		ug/L		89	75 - 124
Trichloroethene	20.0	20.0		ug/L		100	70 - 122
Vinyl chloride	20.0	16.9		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-175790-H-5 MS
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.8		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.6		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	20.0	20.2		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.5		ug/L		82	56 - 136
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124
Vinyl chloride	1.0	U	20.0	15.9		ug/L		79	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175790-H-5 MS
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-175790-K-5 MSD
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	66 - 128	9	14
Tetrachloroethene	1.0	U	20.0	21.8		ug/L		109	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 136	10	15
Trichloroethene	1.0	U	20.0	19.9		ug/L		100	61 - 124	10	15
Vinyl chloride	1.0	U	20.0	18.2		ug/L		91	43 - 157	14	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551642/4
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/22 17:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/11/22 17:29*	*1*

Lab Sample ID: LCS 240-551642/3
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.82		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-175783-J-3 MS
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.98		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-175783-N-3 MSD
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.47		ug/L		95	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

GC/MS VOA

Analysis Batch: 551499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175787-1	TRIP BLANK_48	Total/NA	Water	8260D	
240-175787-2	MW-87_110122	Total/NA	Water	8260D	
240-175787-3	MW-87S_110122	Total/NA	Water	8260D	
MB 240-551499/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551499/5	Lab Control Sample	Total/NA	Water	8260D	
240-175790-H-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-175790-K-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 551642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175787-2	MW-87_110122	Total/NA	Water	8260D SIM	
240-175787-3	MW-87S_110122	Total/NA	Water	8260D SIM	
MB 240-551642/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551642/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175783-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175783-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Client Sample ID: TRIP BLANK_48

Lab Sample ID: 240-175787-1

Date Collected: 11/01/22 00:00

Matrix: Water

Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 15:00

Client Sample ID: MW-87_110122

Lab Sample ID: 240-175787-2

Date Collected: 11/01/22 09:05

Matrix: Water

Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 15:23
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/12/22 01:17

Client Sample ID: MW-87S_110122

Lab Sample ID: 240-175787-3

Date Collected: 11/01/22 09:50

Matrix: Water

Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 15:46
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/12/22 01:41

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175787-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_48	/	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-87_110122	11/1/22	905		6						6					N	C	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-875_110122	11/1/22	950		6						6					N	C	X	X	X	X	X	X	X	1

240-175787 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Standish St ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	11/1/22 1400	Novi Cold Storage	Arcadis	11/1/22 1400
Sommer Hug	Arcadis	11/2/22 1440			11/2/22 1500
		11/2/22 1530	Received in Laboratory by:	EETNC	11-3-22 0945

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 175787
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by:

Cooler Received on 11-3-22 Opened on 11-3-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 175787

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.1	0.8	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 16, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175787-1
Sample date: 2022-11-01
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-16
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175787-1

		Sample Name:	TRIP BLANK_48				MW-87_110122				MW-87S_110122			
		Lab Sample ID:	2401757871				2401757872				2401757873			
		Sample Date:	11/1/2022				11/1/2022				11/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

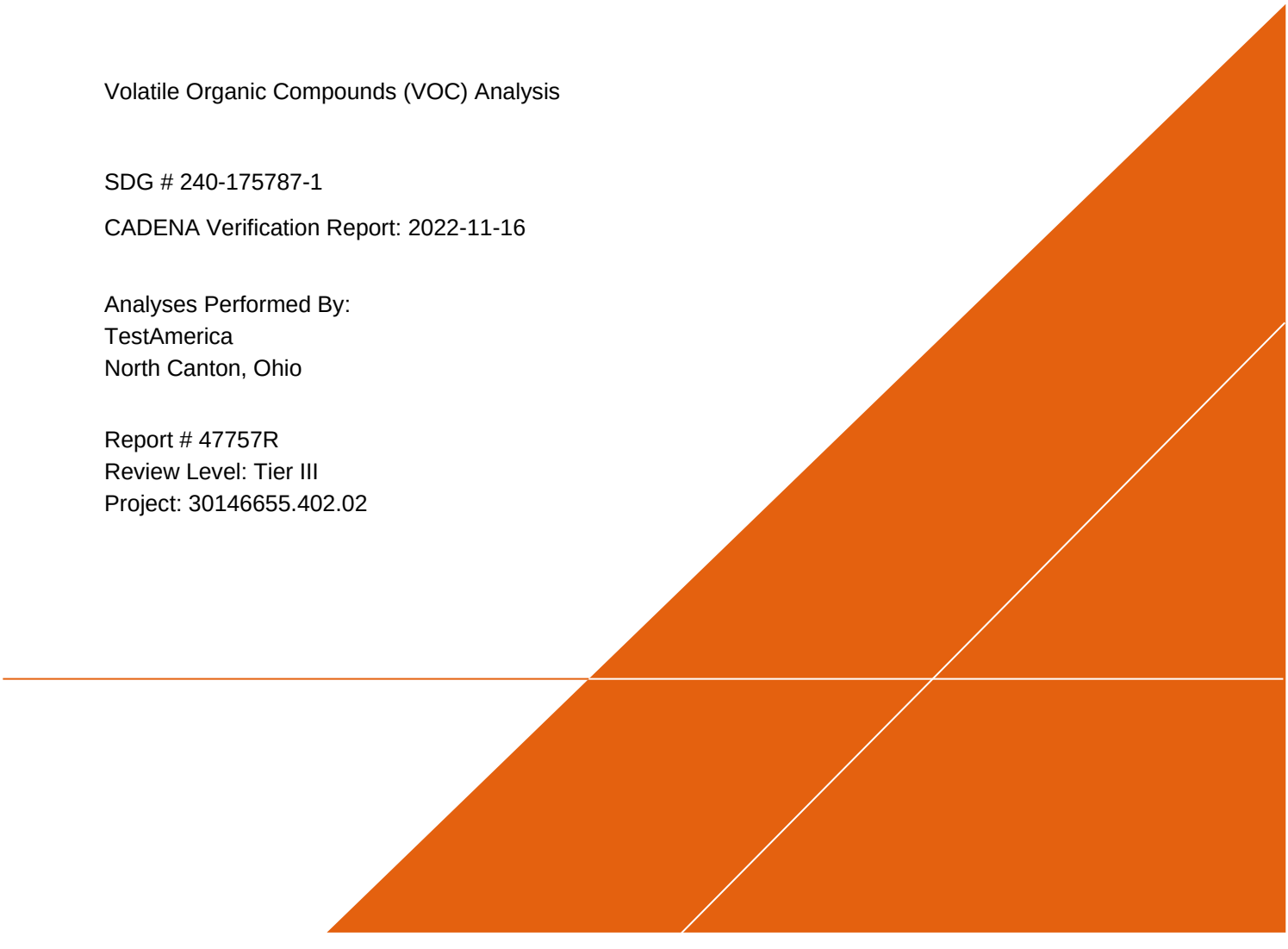
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175787-1

CADENA Verification Report: 2022-11-16

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47757R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175787-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_48	240-175787-1	Water	11/01/22		X	
MW-87_110122	240-175787-2	Water	11/01/22		X	X
MW-87S_110122	240-175787-3	Water	11/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Christen Guerrido	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac) NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_48	/	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-87_110122	11/1/22	905		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-875_110122	11/1/22	950		6						6					N	G	X	X	X	X	X	X	X	1

240-175787 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Standish St ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christen Guerrido	Arcadis	11/1/22 1400	Novi Cold Storage	Arcadis	11/1/22 1400
Sommer Long	Arcadis	11/2/22 1440			11/2/22 1500
		11/2/22 1530	Received in Laboratory by:	EETNC	11-3-22 0945

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Client Sample ID: TRIP BLANK_48
Lab Sample ID: 240-175787-1
Date Collected: 11/01/22 00:00
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 15:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 15:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 15:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 15:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/11/22 15:00*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/11/22 15:00*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 15:00*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/22 15:00*	*1*

Client Sample ID: MW-87_110122
Lab Sample ID: 240-175787-2
Date Collected: 11/01/22 09:05
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 01:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/12/22 01:17*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 15:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 15:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 15:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/11/22 15:23*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/22 15:23*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/22 15:23*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/22 15:23*	*1*

Client Sample ID: MW-87S_110122
Lab Sample ID: 240-175787-3
Date Collected: 11/01/22 09:50
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 01:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/12/22 01:41*	*1*

Client Sample ID: MW-87S_110122
Lab Sample ID: 240-175787-3

Date Collected: 11/01/22 09:50
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 15:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 15:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 15:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 15:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/11/22 15:46*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*11/11/22 15:46*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/11/22 15:46*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 15:46*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:11:17 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175790-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Job ID: 240-175790-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175790-1

Comments
No additional comments.

Receipt
The samples were received on 11/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8º C and 1.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175790-1	TRIP BLANK_33	Water	11/01/22 00:00	11/03/22 09:45
240-175790-2	MW-83_110122	Water	11/01/22 10:10	11/03/22 09:45
240-175790-3	MW-83S_110122	Water	11/01/22 11:01	11/03/22 09:45
240-175790-4	MW-108S_110122	Water	11/01/22 13:50	11/03/22 09:45
240-175790-5	MW-142S_110122	Water	11/01/22 15:09	11/03/22 09:45
240-175790-6	DUP-07	Water	11/01/22 00:00	11/03/22 09:45
240-175790-7	MW-85SR_110122	Water	11/01/22 16:31	11/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: TRIP BLANK_33 — Lab Sample ID: 240-175790-1

No Detections.

Client Sample ID: MW-83_110122 — Lab Sample ID: 240-175790-2

No Detections.

Client Sample ID: MW-83S_110122 — Lab Sample ID: 240-175790-3

No Detections.

Client Sample ID: MW-108S_110122 — Lab Sample ID: 240-175790-4

No Detections.

Client Sample ID: MW-142S_110122 — Lab Sample ID: 240-175790-5

No Detections.

Client Sample ID: DUP-07 — Lab Sample ID: 240-175790-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.94	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-85SR_110122 — Lab Sample ID: 240-175790-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.96	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: TRIP BLANK_33

Date Collected: 11/01/22 00:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/11/22 16:09*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/11/22 16:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/11/22 16:09*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/22 16:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: MW-83_110122
Date Collected: 11/01/22 10:10
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 02:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/12/22 02:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 16:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 16:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 16:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/11/22 16:32*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/22 16:32*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/11/22 16:32*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/22 16:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: MW-83S_110122

Date Collected: 11/01/22 11:01
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 02:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/12/22 02:30*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 16:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 16:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 16:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 16:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/11/22 16:55*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/22 16:55*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/22 16:55*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/22 16:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: MW-108S_110122
Date Collected: 11/01/22 13:50
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 02:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/12/22 02:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 17:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 17:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 17:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 17:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/11/22 17:19*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/11/22 17:19*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/11/22 17:19*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/11/22 17:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: MW-142S_110122
Date Collected: 11/01/22 15:09
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/12/22 18:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 17:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 17:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 17:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/11/22 17:42*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/22 17:42*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 17:42*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/22 17:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: DUP-07
Date Collected: 11/01/22 00:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 19:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 18:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 18:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 18:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:05	1
Vinyl chloride	**0.94**	**J**	1.0	0.45	ug/L			11/11/22 18:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/11/22 18:05*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/11/22 18:05*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/11/22 18:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 18:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: MW-85SR_110122
Date Collected: 11/01/22 16:31
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-7
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/12/22 20:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 18:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 18:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 18:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:28	1
Vinyl chloride	**0.96**	**J**	1.0	0.45	ug/L			11/11/22 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/11/22 18:28*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/22 18:28*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 18:28*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/22 18:28*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175790-1	TRIP BLANK_33	98	82	96	97
240-175790-2	MW-83_110122	91	76	88	92
240-175790-3	MW-83S_110122	95	79	90	94
240-175790-4	MW-108S_110122	101	85	96	100
240-175790-5	MW-142S_110122	97	78	92	97
240-175790-5 MS	MW-142S-MS_110122	89	87	94	90
240-175790-5 MSD	MW-142S-MSD_110122	95	92	98	94
240-175790-6	DUP-07	98	82	95	96
240-175790-7	MW-85SR_110122	95	78	92	93
LCS 240-551499/5	Lab Control Sample	90	88	93	95
MB 240-551499/8	Method Blank	94	81	91	96

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175783-J-3 MS	Matrix Spike	106
240-175783-N-3 MSD	Matrix Spike Duplicate	106
240-175790-2	MW-83_110122	117
240-175790-3	MW-83S_110122	111
240-175790-4	MW-108S_110122	105
240-175790-5	MW-142S_110122	116
240-175790-5 MS	MW-142S-MS_110122	114
240-175790-5 MSD	MW-142S-MSD_110122	119
240-175790-6	DUP-07	118
240-175790-7	MW-85SR_110122	119
LCS 240-551642/3	Lab Control Sample	119
LCS 240-551688/3	Lab Control Sample	117
MB 240-551642/4	Method Blank	111
MB 240-551688/4	Method Blank	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551499/8
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 11:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 11:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 11:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/11/22 11:09*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/11/22 11:09*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/11/22 11:09*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 11:09*	*1*

Lab Sample ID: LCS 240-551499/5
Matrix: Water
Analysis Batch: 551499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.9		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	18.9		ug/L		94	77 - 123
Tetrachloroethene	20.0	21.9		ug/L		110	76 - 123
trans-1,2-Dichloroethene	20.0	17.9		ug/L		89	75 - 124
Trichloroethene	20.0	20.0		ug/L		100	70 - 122
Vinyl chloride	20.0	16.9		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-175790-5 MS
Matrix: Water
Analysis Batch: 551499

Client Sample ID: MW-142S-MS_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.8		ug/L		94	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.6		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	20.0	20.2		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.5		ug/L		82	56 - 136
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124
Vinyl chloride	1.0	U	20.0	15.9		ug/L		79	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175790-5 MS
Matrix: Water
Analysis Batch: 551499

Client Sample ID: MW-142S-MS_110122
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: 240-175790-5 MSD
Matrix: Water
Analysis Batch: 551499

Client Sample ID: MW-142S-MSD_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	66 - 128	9	14
Tetrachloroethene	1.0	U	20.0	21.8		ug/L		109	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 136	10	15
Trichloroethene	1.0	U	20.0	19.9		ug/L		100	61 - 124	10	15
Vinyl chloride	1.0	U	20.0	18.2		ug/L		91	43 - 157	14	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	94		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551642/4
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/22 17:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		66 - 120		11/11/22 17:29	1

Lab Sample ID: LCS 240-551642/3
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.82		ug/L		98	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	119		66 - 120

Lab Sample ID: 240-175783-J-3 MS
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.98		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-175783-N-3 MSD
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.47		ug/L		95	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: MB 240-551688/4
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 17:07*	*1*

Lab Sample ID: LCS 240-551688/3
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.52		ug/L		95	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*

Lab Sample ID: 240-175790-5 MS
Matrix: Water
Analysis Batch: 551688

Client Sample ID: MW-142S-MS_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.82		ug/L		98	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*

Lab Sample ID: 240-175790-5 MSD
Matrix: Water
Analysis Batch: 551688

Client Sample ID: MW-142S-MSD_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	10	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-175790-5 MSD
Matrix: Water
Analysis Batch: 551688

Client Sample ID: MW-142S-MSD_110122
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

GC/MS VOA

Analysis Batch: 551499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175790-1	TRIP BLANK_33	Total/NA	Water	8260D	
240-175790-2	MW-83_110122	Total/NA	Water	8260D	
240-175790-3	MW-83S_110122	Total/NA	Water	8260D	
240-175790-4	MW-108S_110122	Total/NA	Water	8260D	
240-175790-5	MW-142S_110122	Total/NA	Water	8260D	
240-175790-6	DUP-07	Total/NA	Water	8260D	
240-175790-7	MW-85SR_110122	Total/NA	Water	8260D	
MB 240-551499/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551499/5	Lab Control Sample	Total/NA	Water	8260D	
240-175790-5 MS	MW-142S-MS_110122	Total/NA	Water	8260D	
240-175790-5 MSD	MW-142S-MSD_110122	Total/NA	Water	8260D	

Analysis Batch: 551642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175790-2	MW-83_110122	Total/NA	Water	8260D SIM	
240-175790-3	MW-83S_110122	Total/NA	Water	8260D SIM	
240-175790-4	MW-108S_110122	Total/NA	Water	8260D SIM	
MB 240-551642/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551642/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175783-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175783-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175790-5	MW-142S_110122	Total/NA	Water	8260D SIM	
240-175790-6	DUP-07	Total/NA	Water	8260D SIM	
240-175790-7	MW-85SR_110122	Total/NA	Water	8260D SIM	
MB 240-551688/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551688/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175790-5 MS	MW-142S-MS_110122	Total/NA	Water	8260D SIM	
240-175790-5 MSD	MW-142S-MSD_110122	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: TRIP BLANK_33
Date Collected: 11/01/22 00:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 16:09

Client Sample ID: MW-83_110122
Date Collected: 11/01/22 10:10
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 16:32
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/12/22 02:06

Client Sample ID: MW-83S_110122
Date Collected: 11/01/22 11:01
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 16:55
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/12/22 02:30

Client Sample ID: MW-108S_110122
Date Collected: 11/01/22 13:50
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 17:19
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/12/22 02:54

Client Sample ID: MW-142S_110122
Date Collected: 11/01/22 15:09
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 17:42
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 18:44

Client Sample ID: DUP-07
Date Collected: 11/01/22 00:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 18:05
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 19:57

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Client Sample ID: MW-85SR_110122

Date Collected: 11/01/22 16:31
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175790-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551499	HMB	EET CAN	11/11/22 18:28
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 20:22

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175790-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Leticia Ferrer	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_33	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-33_110122	11/01/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-83S_110122	11/01/22	1101		6						6					N	G	X	X	X	X	X	X	X	
MW-108S_110122	11/01/22	1350		6						6					N	G	X	X	X	X	X	X	X	
MW-142S_110122	11/01/22	1509		6						6					N	G	X	X	X	X	X	X	X	
MW-142S_MS_110122	11/01/22	1509		5						5					N	G	X	X	X	X	X	X	X	RUN MS/MSD
MW-142S_MSD_110122	11/01/22	1509		5						5					N	G	X	X	X	X	X	X	X	RUN MS/MSD
~~MW-85SR_110122~~	~~11/01/22~~	~~16:31~~		~~6~~						~~6~~					N	G	X	X	X	X	X			
DUP-07	11/01/22	—		5						5					N	G	X	X	X	X	X	X	X	
MW-85SR_110122	11/01/22	16:31		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati Row + Stark Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Leticia Ferrer	Arcadis	17:50	NOVI COLD STORAGE	Arcadis	17:50
Tommer Ehrg	Arcadis	11/2/22 1440			11/2/22 1500
		11/2/22 1530	Received in Laboratory by:	EETNC	11-3-22 0945

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240-175790 Chain of Custody

Eurofins - Canton Sample Receipt Form/Narrative
Barberton Facility

Login # : 175790

Client Arcadis Site Name

Cooler unpacked by: OMG

Cooler Received on 11-3-22 Opened on 11-3-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp.____°C Corrected Cooler Temp.____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp.____°C Corrected Cooler Temp.____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. (Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION
Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) 1x40mL for TB-33 and; MW425 were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login # : 175790

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.1	0.8	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2022 3:11:17 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 16, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175790-1
Sample date: 2022-11-01
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-16
Number of Samples:7
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175790-1

		Sample Name:	TRIP BLANK_33				MW-83_110122				MW-83S_110122				MW-108S_110122				MW-142S_110122				DUP-07				MW-85SR_110122			
		Lab Sample ID:	2401757901				2401757902				2401757903				2401757904				2401757905				2401757906				2401757907			
		Sample Date:	11/1/2022				11/1/2022				11/1/2022				11/1/2022				11/1/2022				11/1/2022				11/1/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																														
OSW-8260D																														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.94	1.0	ug/l	J	0.96	1.0	ug/l	J
OSW-8260DSIM																														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

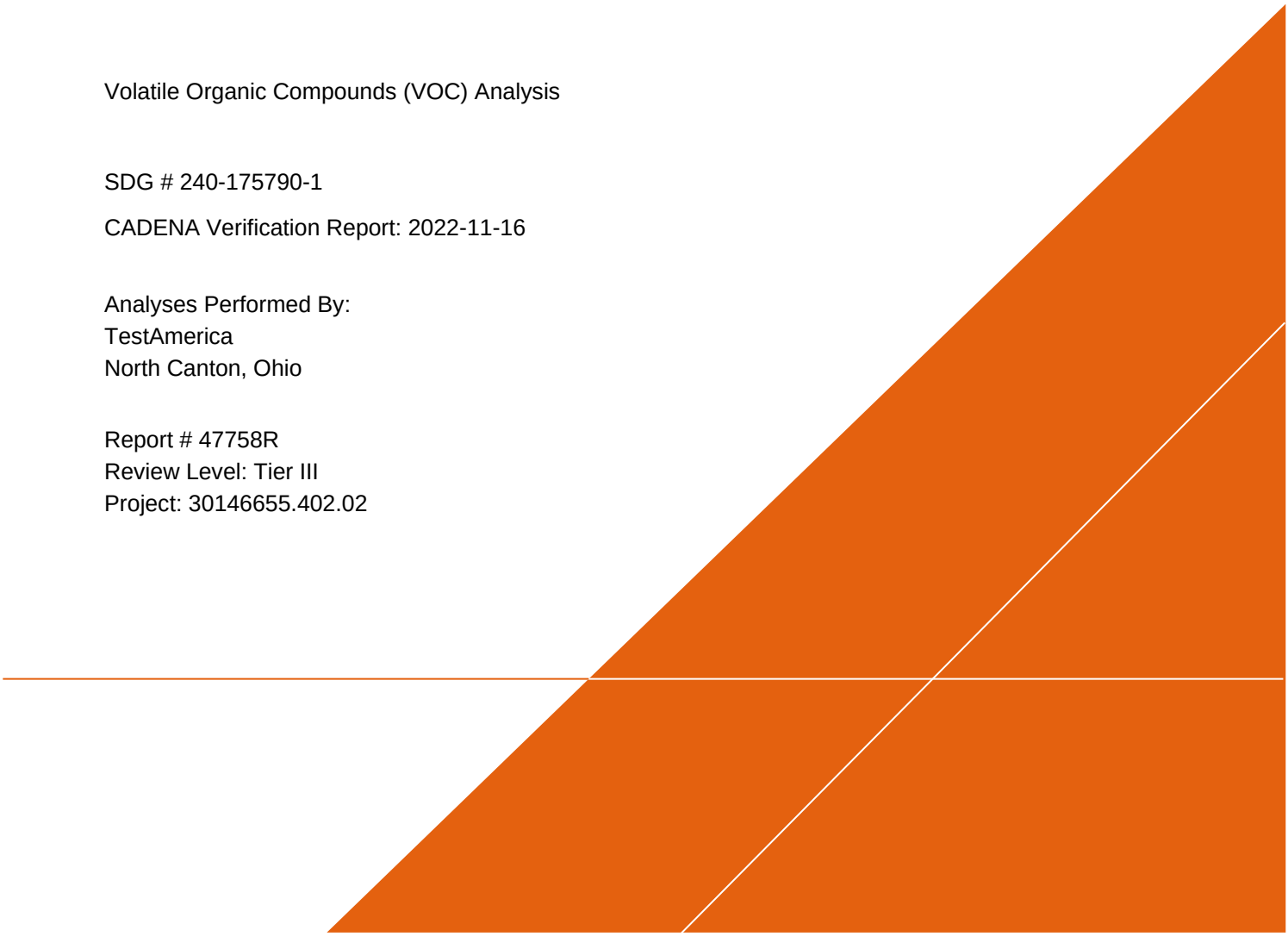
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175790-1

CADENA Verification Report: 2022-11-16

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47758R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175790-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_33	240-175790-1	Water	11/01/22		X	
MW-83_110122	240-175790-2	Water	11/01/22		X	X
MW-83S_110122	240-175790-3	Water	11/01/22		X	X
MW-108S_110122	240-175790-4	Water	11/01/22		X	X
MW-142S_110122	240-175790-5	Water	11/01/22		X	X
DUP-07	240-175790-6	Water	11/01/22	MW-85SR_110122	X	X
MW-85SR_110122	240-175790-7	Water	11/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-85SR_110122 / DUP-07	Vinyl chloride	0.94 J	0.96 J	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Leticia Ferreira	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_33	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-33_110122	11/01/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-83S_110122	11/01/22	1101		6						6					N	G	X	X	X	X	X	X	X	
MW-108S_110122	11/01/22	1350		6						6					N	G	X	X	X	X	X	X	X	
MW-142S_110122	11/01/22	1509		6						6					N	G	X	X	X	X	X	X	X	
MW-142S_MS_110122	11/01/22	1509		6						6					N	G	X	X	X	X	X	X	X	RUN MS/MSD
MW-142S_MSD_110122	11/01/22	1509		6						6					N	G	X	X	X	X	X	X	X	RUN MS/MSD
~~MW-85SR_110122~~	~~11/01/22~~	~~16:31~~		~~6~~						~~6~~					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~			
DUP-07	11/01/22	—		6						6					N	G	X	X	X	X	X	X	X	
MW-85SR_110122	11/01/22	16:31		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati Row + Stark ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leticia Ferreira	Arcadis	17:50	NOVI COLD STORAGE	Arcadis	17:50
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Tommy Hug	Arcadis	11/2/22 1440			11/2/22 1500
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/2/22 1530		EETNC	11-3-22 0945

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240-175790 Chain of Custody

Client Sample ID: TRIP BLANK_33

Lab Sample ID: 240-175790-1

Date Collected: 11/01/22 00:00
Date Received: 11/03/22 09:45

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/11/22 16:09*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/11/22 16:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/11/22 16:09*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/22 16:09*	*1*

Client Sample ID: MW-83_110122

Lab Sample ID: 240-175790-2

Date Collected: 11/01/22 10:10
Date Received: 11/03/22 09:45

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 02:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/12/22 02:06*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 16:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 16:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 16:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/11/22 16:32*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/11/22 16:32*	*1*
Toluene-d8 (Surr)	*88*		*78 - 122*		*11/11/22 16:32*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/11/22 16:32*	*1*

Client Sample ID: MW-83S_110122

Lab Sample ID: 240-175790-3

Date Collected: 11/01/22 11:01
Date Received: 11/03/22 09:45

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 02:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/12/22 02:30*	*1*

Client Sample ID: MW-83S_110122
Lab Sample ID: 240-175790-3

Date Collected: 11/01/22 11:01
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 16:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 16:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 16:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 16:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 16:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/11/22 16:55*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/11/22 16:55*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/11/22 16:55*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/11/22 16:55*	*1*

Client Sample ID: MW-108S_110122
Lab Sample ID: 240-175790-4

Date Collected: 11/01/22 13:50
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 02:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/12/22 02:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 17:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 17:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 17:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 17:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/11/22 17:19*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/11/22 17:19*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/11/22 17:19*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/11/22 17:19*	*1*

Client Sample ID: MW-142S_110122
Lab Sample ID: 240-175790-5

Date Collected: 11/01/22 15:09
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/12/22 18:44*	*1*

Client Sample ID: MW-142S_110122

Lab Sample ID: 240-175790-5

Date Collected: 11/01/22 15:09
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 17:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 17:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 17:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 17:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 17:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/11/22 17:42*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/22 17:42*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 17:42*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/11/22 17:42*	*1*

Client Sample ID: DUP-07

Lab Sample ID: 240-175790-6

Date Collected: 11/01/22 00:00
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 19:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 18:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 18:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 18:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:05	1
Vinyl chloride	**0.94**	**J**	1.0	0.45	ug/L			11/11/22 18:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/11/22 18:05*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/11/22 18:05*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/11/22 18:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 18:05*	*1*

Client Sample ID: MW-85SR_110122

Lab Sample ID: 240-175790-7

Date Collected: 11/01/22 16:31
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/12/22 20:22*	*1*

Client Sample ID: MW-85SR_110122
Lab Sample ID: 240-175790-7

Date Collected: 11/01/22 16:31
Matrix: Water
Date Received: 11/03/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 18:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 18:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 18:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 18:28	1
Vinyl chloride	**0.96**	**J**	1.0	0.45	ug/L			11/11/22 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/11/22 18:28*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/11/22 18:28*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/11/22 18:28*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/11/22 18:28*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:13:39 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175884-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Job ID: 240-175884-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175884-1

Comments
No additional comments.

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9º C, 1.2º C and 1.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175884-1	TRIP BLANK_02	Water	11/01/22 00:00	11/04/22 09:40
240-175884-2	MW-99S_110122	Water	11/01/22 13:15	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Client Sample ID: TRIP BLANK_02 — Lab Sample ID: 240-175884-1

No Detections.

Client Sample ID: MW-99S_110122 — Lab Sample ID: 240-175884-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.74	J	1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Client Sample ID: TRIP BLANK_02

Date Collected: 11/01/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175884-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 12:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/11/22 12:14*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/11/22 12:14*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/22 12:14*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 12:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Client Sample ID: MW-99S_110122
Date Collected: 11/01/22 13:15
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175884-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/14/22 19:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:38	1
cis-1,2-Dichloroethene	**0.74**	**J**	1.0	0.46	ug/L			11/11/22 12:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/11/22 12:38*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/11/22 12:38*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/11/22 12:38*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/11/22 12:38*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175884-1	TRIP BLANK_02	91	101	100	96
240-175884-2	MW-99S_110122	93	100	98	98
240-175884-2 MS	MW-99S-MS_110122	91	102	99	97
240-175884-2 MSD	MW-99S-MSD_110122	91	103	98	98
LCS 240-551496/5	Lab Control Sample	88	99	96	96
MB 240-551496/8	Method Blank	90	102	99	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175884-2	MW-99S_110122	98
240-175884-2 MS	MW-99S-MS_110122	110
240-175884-2 MSD	MW-99S-MSD_110122	112
LCS 240-551906/3	Lab Control Sample	105
MB 240-551906/4	Method Blank	120

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551496/8
Matrix: Water
Analysis Batch: 551496

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 11:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 11:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 11:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 11:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 11:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/11/22 11:25*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/11/22 11:25*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/11/22 11:25*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/11/22 11:25*	*1*

Lab Sample ID: LCS 240-551496/5
Matrix: Water
Analysis Batch: 551496

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.4		ug/L		92	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		93	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	18.2		ug/L		91	75 - 124
Trichloroethene	20.0	18.4		ug/L		92	70 - 122
Vinyl chloride	20.0	17.3		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175884-2 MS
Matrix: Water
Analysis Batch: 551496

Client Sample ID: MW-99S-MS_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.5		ug/L		93	56 - 135
cis-1,2-Dichloroethene	0.74	J	20.0	19.0		ug/L		91	66 - 128
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		91	56 - 136
Trichloroethene	1.0	U	20.0	18.3		ug/L		91	61 - 124
Vinyl chloride	1.0	U	20.0	17.1		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175884-2 MS
Matrix: Water
Analysis Batch: 551496

Client Sample ID: MW-99S-MS_110122
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-175884-2 MSD
Matrix: Water
Analysis Batch: 551496

Client Sample ID: MW-99S-MSD_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 135	9	26
cis-1,2-Dichloroethene	0.74	J	20.0	21.1		ug/L		102	66 - 128	10	14
Tetrachloroethene	1.0	U	20.0	20.8		ug/L		104	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.7		ug/L		99	56 - 136	8	15
Trichloroethene	1.0	U	20.0	20.1		ug/L		101	61 - 124	10	15
Vinyl chloride	1.0	U	20.0	18.2		ug/L		91	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551906/4
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*120*		*66 - 120*		*11/14/22 18:27*	*1*

Lab Sample ID: LCS 240-551906/3
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.69		ug/L		97	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-175884-2 MS
Matrix: Water
Analysis Batch: 551906

Client Sample ID: MW-99S-MS_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*

Lab Sample ID: 240-175884-2 MSD
Matrix: Water
Analysis Batch: 551906

Client Sample ID: MW-99S-MSD_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

GC/MS VOA

Analysis Batch: 551496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175884-1	TRIP BLANK_02	Total/NA	Water	8260D	
240-175884-2	MW-99S_110122	Total/NA	Water	8260D	
MB 240-551496/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551496/5	Lab Control Sample	Total/NA	Water	8260D	
240-175884-2 MS	MW-99S-MS_110122	Total/NA	Water	8260D	
240-175884-2 MSD	MW-99S-MSD_110122	Total/NA	Water	8260D	

Analysis Batch: 551906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175884-2	MW-99S_110122	Total/NA	Water	8260D SIM	
MB 240-551906/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551906/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175884-2 MS	MW-99S-MS_110122	Total/NA	Water	8260D SIM	
240-175884-2 MSD	MW-99S-MSD_110122	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Client Sample ID: TRIP BLANK_02

Lab Sample ID: 240-175884-1

Date Collected: 11/01/22 00:00

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551496	HMB	EET CAN	11/11/22 12:14

Client Sample ID: MW-99S_110122

Lab Sample ID: 240-175884-2

Date Collected: 11/01/22 13:15

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551496	HMB	EET CAN	11/11/22 12:38
Total/NA	Analysis	8260D SIM		1	551906	CS	EET CAN	11/14/22 19:21

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175884-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240			
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Project Name: Ford LTP Off-Site	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client / Lab sampling
Project Number: 30146655.402.04	Method of Shipment/Carrier:			Job/SDG No:
PO # 30146655.402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_02	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-99S_110122	11/1/22	1315		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-99S-MS_110122	11/1/22	1315		4						4					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-99S-MSD_110122	11/1/22	1315		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-175884 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if san: Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Belden Ct ROW
Submit all results through Cadena at jtomalia@cadenace.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam S	Arcadis	11/1/22 1550	Novi Cold Storage	Arcadis	11/1/22 1550
Tommer Stay	Arcadis	11/3/22 1500		FEDEX	11/3/22 1500
	FEDEX	11/3/22 1530	Received in Laboratory by:	EETNC	11-4-22 0940

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11/16/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 175884
Barberton Facility

Client Arcadis Site Name LTP

Cooler Received on _____ Opened on _____

Cooler unpacked by: [illegible]

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 175884

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.5	1.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2022 3:13:39 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175884-1
Sample date: 2022-11-01
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-17
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175884-1

		Sample Name:	TRIP BLANK_02				MW-99S_110122			
		Lab Sample ID:	2401758841				2401758842			
		Sample Date:	11/1/2022				11/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.74	1.0	ug/l	J
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

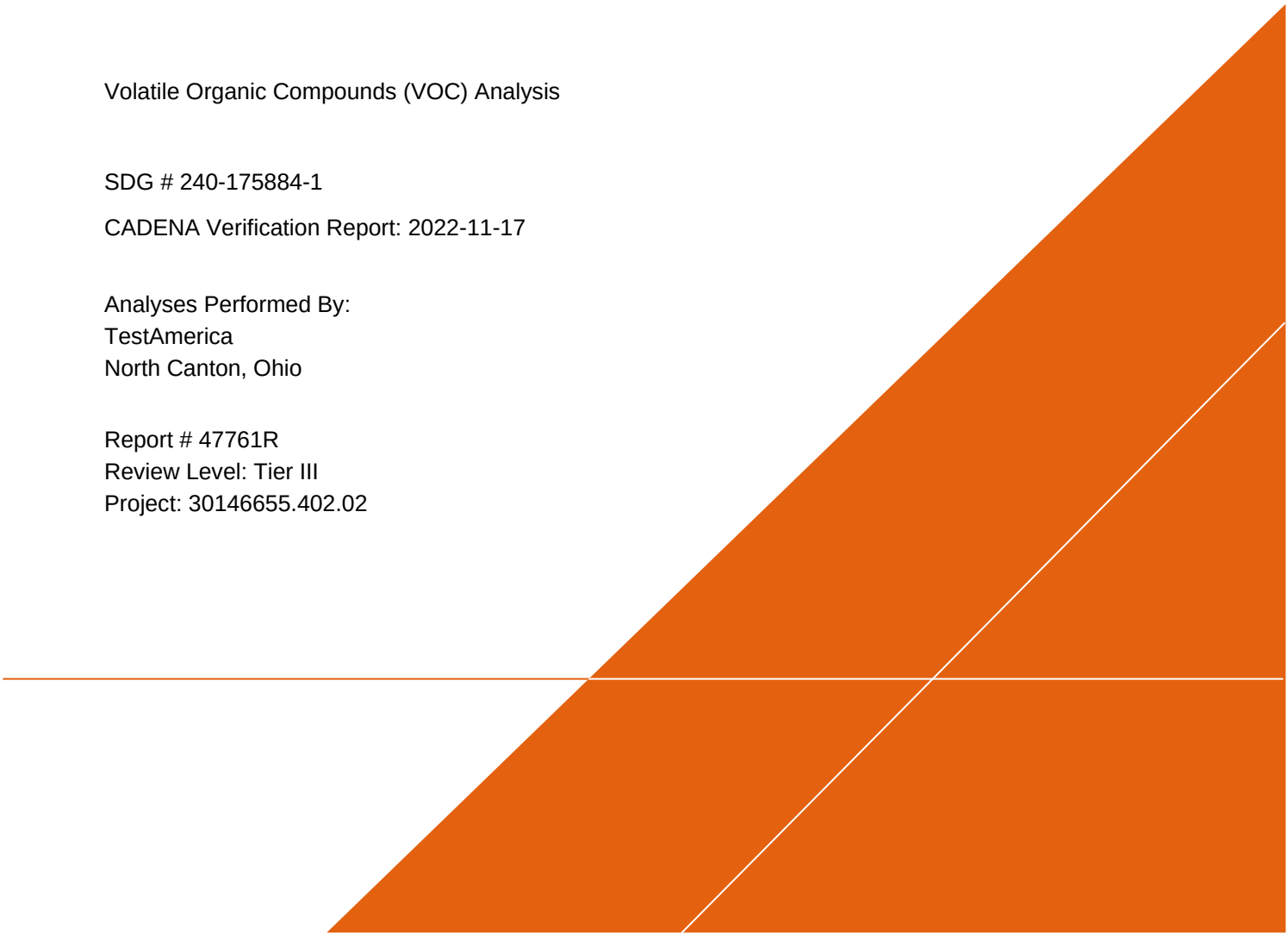
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175884-1

CADENA Verification Report: 2022-11-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47761R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175884-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_02	240-175884-1	Water	11/01/22		X	
MW-99S_110122	240-175884-2	Water	11/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_02	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-99S_110122	11/1/22	1315		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-99S-MS_110122	11/1/22	1315		4						4					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-99S-MSD_110122	11/1/22	1315		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-175884 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if san: ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: Belden Ct ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam S	Arcadis	11/1/22 1550	Novi Cold Storage	Arcadis	11/1/22 1550
Relinquished by: Tommer Ang	Company: Arcadis	Date/Time: 11/3/22 1500	Received by:	Company: FEDEX	Date/Time: 11/3/22 1500
Relinquished by:	Company: FEDEX	Date/Time: 11/3/22 1530	Received in Laboratory by:	Company: EETNC	Date/Time: 11-4-22 0940

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Client Sample ID: TRIP BLANK_02
Lab Sample ID: 240-175884-1
Date Collected: 11/01/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/11/22 12:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/11/22 12:14*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/11/22 12:14*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/11/22 12:14*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/11/22 12:14*	*1*

Client Sample ID: MW-99S_110122
Lab Sample ID: 240-175884-2
Date Collected: 11/01/22 13:15
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*11/14/22 19:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/11/22 12:38	1
cis-1,2-Dichloroethene	**0.74**	**J**	1.0	0.46	ug/L			11/11/22 12:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/11/22 12:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/11/22 12:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/11/22 12:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/11/22 12:38*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/11/22 12:38*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/11/22 12:38*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/11/22 12:38*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:26:34 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175891-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-175891-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175891-1

Comments
No additional comments.

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9º C, 1.2º C and 1.3º C.

GC/MS VOA
Method 8260D SIM: Surrogate recovery for the following sample was outside the upper control limit: MW-72_103122 (240-175891-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175891-1	TRIP BLANK_01	Water	10/31/22 00:00	11/04/22 09:40
240-175891-2	MW-72_103122	Water	10/31/22 10:45	11/04/22 09:40
240-175891-3	MW-72S_103122	Water	10/31/22 11:50	11/04/22 09:40
240-175891-4	MW-73SR_103122	Water	10/31/22 12:50	11/04/22 09:40
240-175891-5	MW-73D_103122	Water	10/31/22 13:55	11/04/22 09:40
240-175891-6	MW-214S_110122	Water	11/01/22 14:35	11/04/22 09:40
240-175891-7	MW-74S_110122	Water	11/01/22 12:00	11/04/22 09:40
240-175891-8	MW-74_110122	Water	11/01/22 10:40	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: TRIP BLANK_01 — Lab Sample ID: 240-175891-1

No Detections.

Client Sample ID: MW-72_103122 — Lab Sample ID: 240-175891-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.81	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-72S_103122 — Lab Sample ID: 240-175891-3

No Detections.

Client Sample ID: MW-73SR_103122 — Lab Sample ID: 240-175891-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.9		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-73D_103122 — Lab Sample ID: 240-175891-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.2		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-214S_110122 — Lab Sample ID: 240-175891-6

No Detections.

Client Sample ID: MW-74S_110122 — Lab Sample ID: 240-175891-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.3		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-74_110122 — Lab Sample ID: 240-175891-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.1		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	3.5		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: TRIP BLANK_01
Date Collected: 10/31/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 11:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 11:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 11:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 11:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 11:32*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/22 11:32*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/10/22 11:32*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/22 11:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-72_103122
Date Collected: 10/31/22 10:45
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*	*S1+*	*66 - 120*		*11/12/22 18:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 11:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 11:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 11:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:57	1
Vinyl chloride	**0.81**	**J**	1.0	0.45	ug/L			11/10/22 11:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 11:57*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 11:57*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/10/22 11:57*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/22 11:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-72S_103122
Date Collected: 10/31/22 11:50
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 08:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/13/22 08:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 12:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 12:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 12:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 12:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/10/22 12:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 12:21*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/10/22 12:21*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/22 12:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-73SR_103122
Date Collected: 10/31/22 12:50
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 09:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*		*11/13/22 09:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 12:45	1
cis-1,2-Dichloroethene	**1.9**		1.0	0.46	ug/L			11/10/22 12:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 12:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 12:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 12:45*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/22 12:45*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/10/22 12:45*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/22 12:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-73D_103122

Date Collected: 10/31/22 13:55
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-5

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.2		2.0	0.86	ug/L			11/13/22 09:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/13/22 09:32*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 13:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 13:10*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/22 13:10*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/10/22 13:10*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/22 13:10*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-214S_110122
Date Collected: 11/01/22 14:35
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 09:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/13/22 09:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 13:34*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/22 13:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/10/22 13:34*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/22 13:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-74S_110122
Date Collected: 11/01/22 12:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-7
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 10:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/13/22 10:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:59	1
cis-1,2-Dichloroethene	**1.3**		1.0	0.46	ug/L			11/10/22 13:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 13:59*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 13:59*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/10/22 13:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/10/22 13:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-74_110122
Date Collected: 11/01/22 10:40
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175891-8
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.1**		2.0	0.86	ug/L			11/13/22 10:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/13/22 10:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 14:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 14:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 14:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 14:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 14:23	1
Vinyl chloride	**3.5**		1.0	0.45	ug/L			11/10/22 14:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/10/22 14:23*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/10/22 14:23*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/22 14:23*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/22 14:23*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175891-1	TRIP BLANK_01	89	100	96	92
240-175891-2	MW-72_103122	88	101	98	93
240-175891-3	MW-72S_103122	90	101	98	94
240-175891-4	MW-73SR_103122	89	99	95	93
240-175891-5	MW-73D_103122	89	99	94	92
240-175891-6	MW-214S_110122	88	100	97	94
240-175891-7	MW-74S_110122	89	101	99	95
240-175891-8	MW-74_110122	91	102	100	96
240-175891-8 MS	MW-74_110122	93	104	101	96
240-175891-8 MSD	MW-74_110122	92	102	98	97
LCS 240-551304/5	Lab Control Sample	88	102	97	93
MB 240-551304/8	Method Blank	88	101	95	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175790-G-5 MS	Matrix Spike	114
240-175790-M-5 MSD	Matrix Spike Duplicate	119
240-175891-2	MW-72_103122	122 S1+
240-175891-3	MW-72S_103122	109
240-175891-4	MW-73SR_103122	113
240-175891-5	MW-73D_103122	114
240-175891-6	MW-214S_110122	104
240-175891-7	MW-74S_110122	108
240-175891-8	MW-74_110122	114
240-175891-8 MS	MW-74_110122	106
240-175891-8 MSD	MW-74_110122	112
LCS 240-551688/3	Lab Control Sample	117
LCS 240-551689/3	Lab Control Sample	119
MB 240-551688/4	Method Blank	118
MB 240-551689/4	Method Blank	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551304/8
Matrix: Water
Analysis Batch: 551304

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 11:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 11:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 11:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 11:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 11:08*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 11:08*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/10/22 11:08*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/22 11:08*	*1*

Lab Sample ID: LCS 240-551304/5
Matrix: Water
Analysis Batch: 551304

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	77 - 123
Tetrachloroethene	20.0	18.4		ug/L		92	76 - 123
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
Trichloroethene	20.0	17.7		ug/L		89	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-175891-8 MS
Matrix: Water
Analysis Batch: 551304

Client Sample ID: MW-74_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.9		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	66 - 128
Tetrachloroethene	1.0	U	20.0	19.7		ug/L		99	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.7		ug/L		89	56 - 136
Trichloroethene	1.0	U	20.0	18.2		ug/L		91	61 - 124
Vinyl chloride	3.5		20.0	22.3		ug/L		94	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175891-8 MS
Matrix: Water
Analysis Batch: 551304

Client Sample ID: MW-74_110122
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175891-8 MSD
Matrix: Water
Analysis Batch: 551304

Client Sample ID: MW-74_110122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	20.0	20.1		ug/L		100	66 - 128	9	14
Tetrachloroethene	1.0	U	20.0	20.9		ug/L		105	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.5		ug/L		98	56 - 136	9	15
Trichloroethene	1.0	U	20.0	20.2		ug/L		101	61 - 124	10	15
Vinyl chloride	3.5		20.0	23.7		ug/L		101	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551688/4
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 17:07*	*1*

Lab Sample ID: LCS 240-551688/3
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.52		ug/L		95	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*

Lab Sample ID: 240-175790-G-5 MS
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.82		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	114		66 - 120

Lab Sample ID: 240-175790-M-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551688

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	10	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	119		66 - 120

Lab Sample ID: MB 240-551689/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551689

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 05:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		66 - 120		11/13/22 05:54	1

Lab Sample ID: LCS 240-551689/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551689

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.78		ug/L		98	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	119		66 - 120

Lab Sample ID: 240-175891-8 MS — **Client Sample ID: MW-74_110122**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551689

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.1		10.0	11.7		ug/L		96	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	106		66 - 120

Lab Sample ID: 240-175891-8 MSD — **Client Sample ID: MW-74_110122**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551689

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	11.5		ug/L		94	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-175891-8 MSD
Matrix: Water
Analysis Batch: 551689

Client Sample ID: MW-74_110122
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

GC/MS VOA

Analysis Batch: 551304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175891-1	TRIP BLANK_01	Total/NA	Water	8260D	
240-175891-2	MW-72_103122	Total/NA	Water	8260D	
240-175891-3	MW-72S_103122	Total/NA	Water	8260D	
240-175891-4	MW-73SR_103122	Total/NA	Water	8260D	
240-175891-5	MW-73D_103122	Total/NA	Water	8260D	
240-175891-6	MW-214S_110122	Total/NA	Water	8260D	
240-175891-7	MW-74S_110122	Total/NA	Water	8260D	
240-175891-8	MW-74_110122	Total/NA	Water	8260D	
MB 240-551304/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551304/5	Lab Control Sample	Total/NA	Water	8260D	
240-175891-8 MS	MW-74_110122	Total/NA	Water	8260D	
240-175891-8 MSD	MW-74_110122	Total/NA	Water	8260D	

Analysis Batch: 551688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175891-2	MW-72_103122	Total/NA	Water	8260D SIM	
MB 240-551688/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551688/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175790-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175790-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175891-3	MW-72S_103122	Total/NA	Water	8260D SIM	
240-175891-4	MW-73SR_103122	Total/NA	Water	8260D SIM	
240-175891-5	MW-73D_103122	Total/NA	Water	8260D SIM	
240-175891-6	MW-214S_110122	Total/NA	Water	8260D SIM	
240-175891-7	MW-74S_110122	Total/NA	Water	8260D SIM	
240-175891-8	MW-74_110122	Total/NA	Water	8260D SIM	
MB 240-551689/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551689/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175891-8 MS	MW-74_110122	Total/NA	Water	8260D SIM	
240-175891-8 MSD	MW-74_110122	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: TRIP BLANK_01
Lab Sample ID: 240-175891-1
Date Collected: 10/31/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 11:32

Client Sample ID: MW-72_103122
Lab Sample ID: 240-175891-2
Date Collected: 10/31/22 10:45
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 11:57
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 18:20

Client Sample ID: MW-72S_103122
Lab Sample ID: 240-175891-3
Date Collected: 10/31/22 11:50
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 12:21
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 08:44

Client Sample ID: MW-73SR_103122
Lab Sample ID: 240-175891-4
Date Collected: 10/31/22 12:50
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 12:45
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 09:08

Client Sample ID: MW-73D_103122
Lab Sample ID: 240-175891-5
Date Collected: 10/31/22 13:55
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 13:10
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 09:32

Client Sample ID: MW-214S_110122
Lab Sample ID: 240-175891-6
Date Collected: 11/01/22 14:35
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 13:34
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 09:57

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Client Sample ID: MW-74S_110122

Lab Sample ID: 240-175891-7

Date Collected: 11/01/22 12:00

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 13:59
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 10:21

Client Sample ID: MW-74_110122

Lab Sample ID: 240-175891-8

Date Collected: 11/01/22 10:40

Matrix: Water

Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551304	HMB	EET CAN	11/10/22 14:23
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 10:45

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175891-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_01		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-72_103122	10/31/22	1045		6						6							X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-72S_103122		1150		6						6							X	X	X	X	X	X	X	
MW-73SR_103122		1250		4						6							X	X	X	X	X	X	X	
MW-73D_103122		1355		5						6							X	X	X	X	X	X	X	
MW-214S_110122	11/1/22	1435		6						6							X	X	X	X	X	X	X	
MW-74S_110122		1200		5						6							X	X	X	X	X	X	X	
MW-74_110122		1040		6						6							X	X	X	X	X	X	X	
MW-74-MS_110122		1040		6						6							X	X	X	X	X	X	X	Run MS/MSD
MW-74-MSD_110122		1040		6						6							X	X	X	X	X	X	V	Run MS/MSD

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam S	Arcadis	11/1/22 1550	Novi Coldstorage	Arcadis	11/1/22 1550
Relinquished by: Dommer Hay	Company: Arcadis	Date/Time: 11/3/22 1500	Received by:	Company:	Date/Time: 11/3/22 1500
Relinquished by:	Company:	Date/Time: 11/3/22 1530	Received in Laboratory by:	Company:	Date/Time:

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240-175891 Chain of Custody

Eurofins - Canton Sample Receipt Form/Narrative Login # : 175891
Barberton Facility

Client Arcadis Site Name LTP

Cooler Received on _____ Opened on _____

Cooler unpacked by: Anne

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt (X) See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286777
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) 1x40TB01; 2x40 MW73D; 4x40mL MW74 were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 175891

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.5	1.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/16/2022 3:26:34 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 17, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175891-1
Sample date: 2022-11-01 2022-10-31
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-17
Number of Samples:8
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC sample -002 surrogate recovery outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175891-1

	Sample Name:	TRIP BLANK_01				MW-72_103122				MW-72S_103122				MW-73SR_103122				MW-73D_103122				MW-214S_110122				MW-74S_110122				MW-74_110122			
	Lab Sample ID:	2401758911				2401758912				2401758913				2401758914				2401758915				2401758916				2401758917				2401758918			
	Sample Date:	10/31/2022				10/31/2022				10/31/2022				10/31/2022				10/31/2022				11/1/2022				11/1/2022				11/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																																	
OSW-8260D																																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.9	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.3	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.81	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.5	1.0	ug/l	---
OSW-8260DSIM																																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	3.2	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	2.1	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

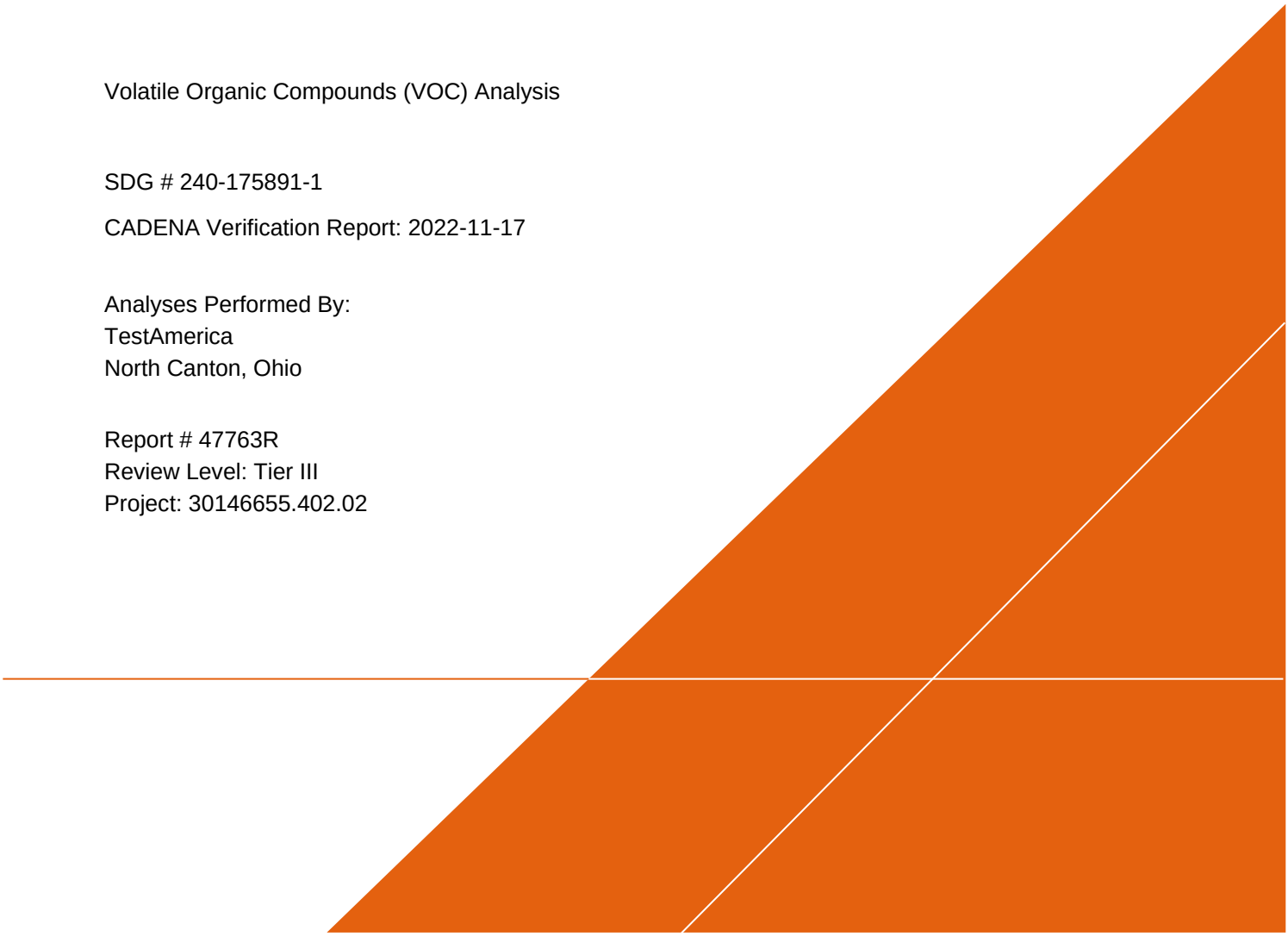
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175891-1

CADENA Verification Report: 2022-11-17

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47763R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175891-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_01	240-175891-1	Water	10/31/22		X	
MW-72_103122	240-175891-2	Water	10/31/22		X	X
MW-72S_103122	240-175891-3	Water	10/31/22		X	X
MW-73SR_103122	240-175891-4	Water	10/31/22		X	X
MW-73D_103122	240-175891-5	Water	10/31/22		X	X
MW-214S_110122	240-175891-6	Water	11/01/22		X	X
MW-74S_110122	240-175891-7	Water	11/01/22		X	X
MW-74_110122	240-175891-8	Water	11/01/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_01		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-72_103122	10/31/22	1045		6						6							X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-72S_103122		1150		6						6							X	X	X	X	X	X	X	
MW-73SR_103122		1250		4						6							X	X	X	X	X	X	X	
MW-73D_103122		1355		5						6							X	X	X	X	X	X	X	
MW-214S_110122	11/1/22	1435		6						6							X	X	X	X	X	X	X	
MW-74S_110122		1200		5						6							X	X	X	X	X	X	X	
MW-74_110122		1040		6						6							X	X	X	X	X	X	X	
MW-74-MS_110122		1040		6						6							X	X	X	X	X	X	X	Run MS/MSD
MW-74-MSD_110122		1040		6						6							X	X	X	X	X	X	X	Run MS/MSD

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam S	Arcadis	11/1/22 1550	Novi Cold storage	Arcadis	11/1/22 1550
Sommer Hay	Arcadis	11/3/22 1500			11/3/22 1500
		11/3/22 1530	Received in Laboratory by:	Company:	Date/Time:

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240-175891 Chain of Custody

11/16/2022 3:14 PM

Client Sample ID: TRIP BLANK_01

Lab Sample ID: 240-175891-1

Date Collected: 10/31/22 00:00
Date Received: 11/04/22 09:40

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 11:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 11:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 11:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 11:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 11:32*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/22 11:32*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/10/22 11:32*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/22 11:32*	*1*

Client Sample ID: MW-72_103122

Lab Sample ID: 240-175891-2

Date Collected: 10/31/22 10:45
Date Received: 11/04/22 09:40

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*	*S1+*	*66 - 120*		*11/12/22 18:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 11:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 11:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 11:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 11:57	1
Vinyl chloride	**0.81**	**J**	1.0	0.45	ug/L			11/10/22 11:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 11:57*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 11:57*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/10/22 11:57*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/22 11:57*	*1*

Client Sample ID: MW-72S_103122

Lab Sample ID: 240-175891-3

Date Collected: 10/31/22 11:50
Date Received: 11/04/22 09:40

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 08:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/13/22 08:44*	*1*

Client Sample ID: MW-72S_103122

Lab Sample ID: 240-175891-3

Date Collected: 10/31/22 11:50
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 12:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 12:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 12:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 12:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/10/22 12:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 12:21*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/10/22 12:21*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/22 12:21*	*1*

Client Sample ID: MW-73SR_103122

Lab Sample ID: 240-175891-4

Date Collected: 10/31/22 12:50
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 09:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*		*11/13/22 09:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 12:45	1
cis-1,2-Dichloroethene	**1.9**		1.0	0.46	ug/L			11/10/22 12:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 12:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 12:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 12:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 12:45*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/22 12:45*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/10/22 12:45*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/10/22 12:45*	*1*

Client Sample ID: MW-73D_103122

Lab Sample ID: 240-175891-5

Date Collected: 10/31/22 13:55
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**3.2**		2.0	0.86	ug/L			11/13/22 09:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/13/22 09:32*	*1*

Client Sample ID: MW-73D_103122

Lab Sample ID: 240-175891-5

Date Collected: 10/31/22 13:55

Matrix: Water

Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 13:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 13:10*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/10/22 13:10*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/10/22 13:10*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/10/22 13:10*	*1*

Client Sample ID: MW-214S_110122

Lab Sample ID: 240-175891-6

Date Collected: 11/01/22 14:35

Matrix: Water

Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 09:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/13/22 09:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*11/10/22 13:34*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/10/22 13:34*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/10/22 13:34*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/10/22 13:34*	*1*

Client Sample ID: MW-74S_110122

Lab Sample ID: 240-175891-7

Date Collected: 11/01/22 12:00

Matrix: Water

Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 10:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/13/22 10:21*	*1*

Client Sample ID: MW-74S_110122
Lab Sample ID: 240-175891-7

Date Collected: 11/01/22 12:00
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 13:59	1
cis-1,2-Dichloroethene	**1.3**		1.0	0.46	ug/L			11/10/22 13:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 13:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 13:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/10/22 13:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/10/22 13:59*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/10/22 13:59*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/10/22 13:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/10/22 13:59*	*1*

Client Sample ID: MW-74_110122
Lab Sample ID: 240-175891-8

Date Collected: 11/01/22 10:40
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.1**		2.0	0.86	ug/L			11/13/22 10:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/13/22 10:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/10/22 14:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/10/22 14:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 14:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/10/22 14:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/10/22 14:23	1
Vinyl chloride	**3.5**		1.0	0.45	ug/L			11/10/22 14:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/10/22 14:23*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/10/22 14:23*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/10/22 14:23*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/10/22 14:23*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/18/2022 7:58:21 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175883-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Job ID: 240-175883-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175883-1

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.2°C and 1.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175883-1	TRIP BLANK_40	Water	11/03/22 00:00	11/04/22 09:40
240-175883-2	MW-133S_110322	Water	11/03/22 12:35	11/04/22 09:40
240-175883-3	MW-82D_110322	Water	11/03/22 10:05	11/04/22 09:40
240-175883-4	MW-82SR_110322	Water	11/03/22 11:05	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Client Sample ID: TRIP BLANK_40 — Lab Sample ID: 240-175883-1

No Detections.

Client Sample ID: MW-133S_110322 — Lab Sample ID: 240-175883-2

No Detections.

Client Sample ID: MW-82D_110322 — Lab Sample ID: 240-175883-3

No Detections.

Client Sample ID: MW-82SR_110322 — Lab Sample ID: 240-175883-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Client Sample ID: TRIP BLANK_40
Date Collected: 11/03/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175883-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 16:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 16:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 16:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 16:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/14/22 16:46*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/14/22 16:46*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/14/22 16:46*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/14/22 16:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Client Sample ID: MW-133S_110322
Date Collected: 11/03/22 12:35
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175883-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 21:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/12/22 21:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/14/22 17:10*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/14/22 17:10*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/14/22 17:10*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 17:10*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Client Sample ID: MW-82D_110322

Date Collected: 11/03/22 10:05
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175883-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 21:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 21:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/14/22 17:33*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/14/22 17:33*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/14/22 17:33*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 17:33*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Client Sample ID: MW-82SR_110322
Date Collected: 11/03/22 11:05
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175883-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 23:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/22 23:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/14/22 17:56*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/14/22 17:56*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/14/22 17:56*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/14/22 17:56*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175783-E-3 MS	Matrix Spike	99	102	107	96
240-175783-I-3 MSD	Matrix Spike Duplicate	102	102	110	99
240-175883-1	TRIP BLANK_40	103	88	103	97
240-175883-2	MW-133S_110322	105	95	104	98
240-175883-3	MW-82D_110322	104	94	105	98
240-175883-4	MW-82SR_110322	106	92	107	99
LCS 240-551772/5	Lab Control Sample	98	101	106	96
MB 240-551772/8	Method Blank	104	92	105	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175790-G-5 MS	Matrix Spike	114
240-175790-M-5 MSD	Matrix Spike Duplicate	119
240-175883-2	MW-133S_110322	114
240-175883-3	MW-82D_110322	118
240-175883-4	MW-82SR_110322	83
240-175888-I-5 MS	Matrix Spike	84
240-175888-O-5 MSD	Matrix Spike Duplicate	83
LCS 240-551688/3	Lab Control Sample	117
LCS 240-551905/3	Lab Control Sample	81
MB 240-551688/4	Method Blank	118
MB 240-551905/4	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551772/8
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 10:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 10:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 10:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 10:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 10:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 10:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/14/22 10:58*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/14/22 10:58*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/14/22 10:58*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 10:58*	*1*

Lab Sample ID: LCS 240-551772/5
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.1		ug/L		86	63 - 134
cis-1,2-Dichloroethene	20.0	17.1		ug/L		85	77 - 123
Tetrachloroethene	20.0	18.8		ug/L		94	76 - 123
trans-1,2-Dichloroethene	20.0	17.1		ug/L		86	75 - 124
Trichloroethene	20.0	17.1		ug/L		86	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175783-E-3 MS
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	20.0	19.5		ug/L		97	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.7		ug/L		89	56 - 136
Trichloroethene	1.0	U	20.0	17.5		ug/L		88	61 - 124
Vinyl chloride	1.0	U	20.0	17.4		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175783-E-3 MS
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-175783-I-3 MSD
Matrix: Water
Analysis Batch: 551772

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	1	14
Tetrachloroethene	1.0	U	20.0	19.8		ug/L		99	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.1		ug/L		90	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	17.8		ug/L		89	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	110		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551688/4
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		66 - 120		11/12/22 17:07	1

Lab Sample ID: LCS 240-551688/3
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.52		ug/L		95	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	117		66 - 120

Lab Sample ID: 240-175790-G-5 MS
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.82		ug/L		98	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	114		66 - 120

Lab Sample ID: 240-175790-M-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551688

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	10	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	119		66 - 120

Lab Sample ID: MB 240-551905/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551905

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		11/14/22 18:37	1

Lab Sample ID: LCS 240-551905/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551905

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.34		ug/L		93	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

Lab Sample ID: 240-175888-I-5 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551905

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		66 - 120

Lab Sample ID: 240-175888-O-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 551905

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.97		ug/L		100	51 - 153	0	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-175888-O-5 MSD
Matrix: Water
Analysis Batch: 551905

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

GC/MS VOA

Analysis Batch: 551688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175883-2	MW-133S_110322	Total/NA	Water	8260D SIM	
240-175883-3	MW-82D_110322	Total/NA	Water	8260D SIM	
MB 240-551688/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551688/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175790-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175790-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175883-1	TRIP BLANK_40	Total/NA	Water	8260D	
240-175883-2	MW-133S_110322	Total/NA	Water	8260D	
240-175883-3	MW-82D_110322	Total/NA	Water	8260D	
240-175883-4	MW-82SR_110322	Total/NA	Water	8260D	
MB 240-551772/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551772/5	Lab Control Sample	Total/NA	Water	8260D	
240-175783-E-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-175783-I-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 551905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175883-4	MW-82SR_110322	Total/NA	Water	8260D SIM	
MB 240-551905/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551905/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175888-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175888-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Client Sample ID: TRIP BLANK_40

Lab Sample ID: 240-175883-1
Matrix: Water
Date Collected: 11/03/22 00:00
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551772	TJL1	EET CAN	11/14/22 16:46

Client Sample ID: MW-133S_110322

Lab Sample ID: 240-175883-2
Matrix: Water
Date Collected: 11/03/22 12:35
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551772	TJL1	EET CAN	11/14/22 17:10
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 21:35

Client Sample ID: MW-82D_110322

Lab Sample ID: 240-175883-3
Matrix: Water
Date Collected: 11/03/22 10:05
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551772	TJL1	EET CAN	11/14/22 17:33
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 21:59

Client Sample ID: MW-82SR_110322

Lab Sample ID: 240-175883-4
Matrix: Water
Date Collected: 11/03/22 11:05
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551772	TJL1	EET CAN	11/14/22 17:56
Total/NA	Analysis	8260D SIM		1	551905	CS	EET CAN	11/14/22 23:40

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175883-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_40		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
~~MW-82D_110322~~	~~11/03/22~~	~~1005~~		~~6~~						~~6~~					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	3 VOAs for 8260B 3 VOAs for 8260B SIM
~~MW-82SR_110322~~	~~11/03/22~~	~~1105~~		~~6~~						~~6~~					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
MW-153S_110322	11/03/22	1235		6						6					N	G	X	X	X	X	X	X	X	
MW-82D_110322	11/3/22	1005		6						6					N	G	X	X	X	X	X	X	X	
MW-82SR_110322	11/3/22	1105		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assess): Return to Client; Dispos

240-175883 Chain of Custody

Special Instructions/QC Requirements & Comments:
Sample Address: Stark rd. ROW
Submit all results through Cadena at jtomala@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Sam Sukaria	Arcadis	11/03/22 1404	Arcadis Cold Storage	Arcadis	11/03/22 1404
Jommer Ebuy	Arcadis	11/3/22 1500			11/3/22 1500
		11/3/22 1530	Received in Laboratory by:	EBTNC	11-4-22 0940

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176883
Barberton Facility

Client Arcadis Site Name LTP

Cooler unpacked by: SME

Cooler Received on _____ Opened on _____

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt (X) See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286791
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 322901VB (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 175883

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.5	1.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175883-1
Sample date: 2022-11-03
Report received by CADENA: 2022-11-18
Initial Data Verification completed by CADENA: 2022-11-18
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175883-1

		Sample Name:	TRIP BLANK_40				MW-133S_110322				MW-82D_110322				MW-82SR_110322			
		Lab Sample ID:	2401758831				2401758832				2401758833				2401758834			
		Sample Date:	11/3/2022				11/3/2022				11/3/2022				11/3/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

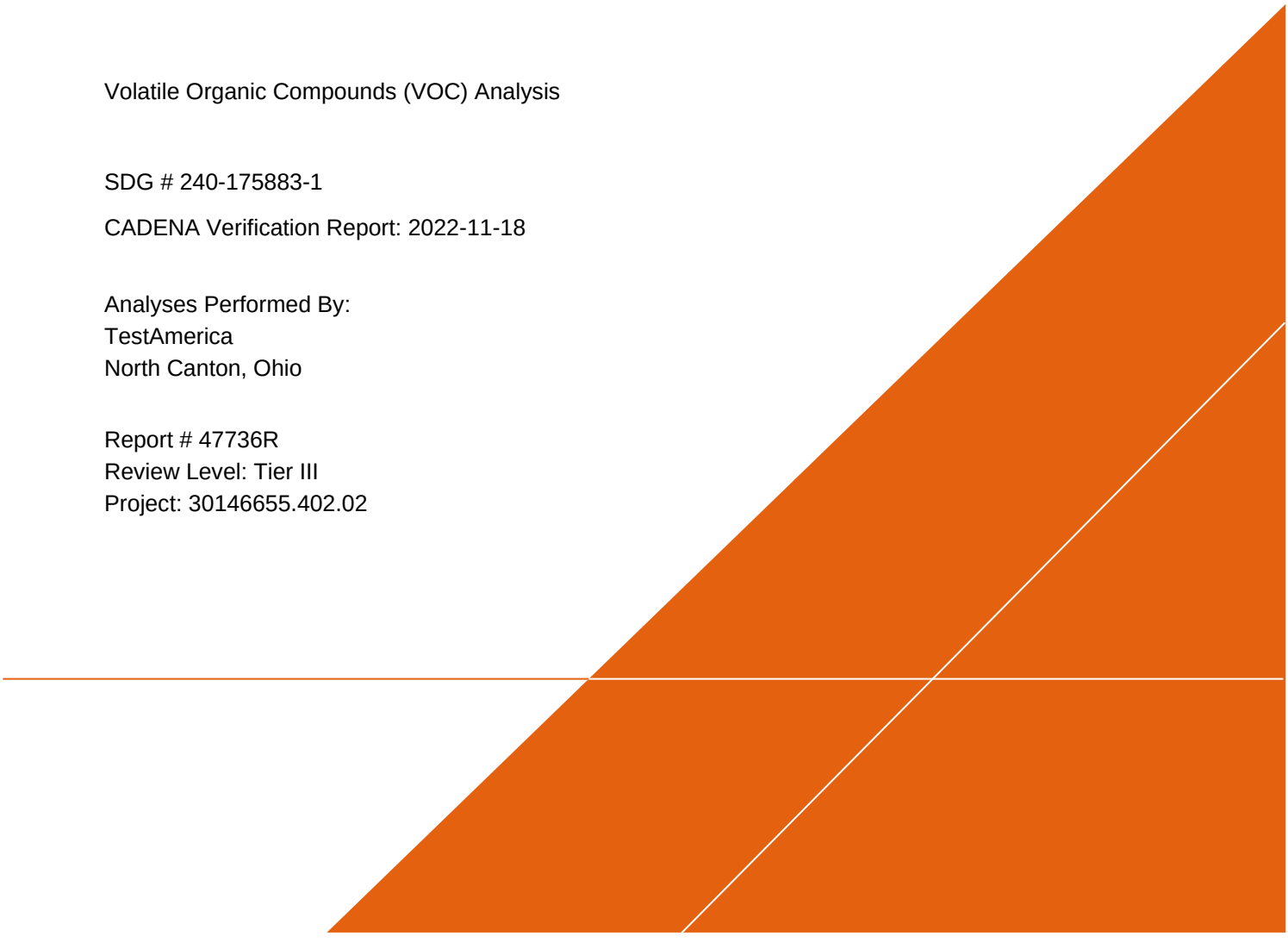
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175883-1

CADENA Verification Report: 2022-11-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47736R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175883-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_40	240-175883-1	Water	11/03/22		X	
MW-133S_110322	240-175883-2	Water	11/03/22		X	X
MW-82D_110322	240-175883-3	Water	11/03/22		X	X
MW-82SR_110322	240-175883-4	Water	11/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 29, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 40		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
~~MW-82D_110322~~	~~11/03/22~~	~~1005~~		6						6					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	3 VOAs for 8260B 3 VOAs for 8260B SIM
~~MW-82SR_110322~~	~~11/03/22~~	~~1105~~		6						6					~~N~~	~~G~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
MW-133S_110322	11/03/22	1235		6						6					N	G	X	X	X	X	X	X	X	
MW-82D_110322	11/3/22	1005		6						6					N	G	X	X	X	X	X	X	X	
MW-82SR_110322	11/3/22	1105		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assess): Return to Client; Dispos

240-175883 Chain of Custody

Special Instructions/QC Requirements & Comments:

Sample Address: Stark rd. ROW

Submit all results through Cadena at jtommila@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Sam Sukaria	Arcadis	11/03/22 1404	Arcadis Cold Storage	Arcadis	11/03/22 1404
Jommer Ong	Arcadis	11/3/22 1500			11/3/22 1500
		11/3/22 1530	Received in Laboratory by:	EBTNC	11-4-22 0940

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Client Sample ID: TRIP BLANK_40

Lab Sample ID: 240-175883-1

Date Collected: 11/03/22 00:00
Date Received: 11/04/22 09:40

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 16:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 16:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 16:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 16:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/14/22 16:46*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/14/22 16:46*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/14/22 16:46*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/14/22 16:46*	*1*

Client Sample ID: MW-133S_110322

Lab Sample ID: 240-175883-2

Date Collected: 11/03/22 12:35
Date Received: 11/04/22 09:40

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 21:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*11/12/22 21:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/14/22 17:10*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/14/22 17:10*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/14/22 17:10*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 17:10*	*1*

Client Sample ID: MW-82D_110322

Lab Sample ID: 240-175883-3

Date Collected: 11/03/22 10:05
Date Received: 11/04/22 09:40

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 21:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 21:59*	*1*

Client Sample ID: MW-82D_110322
Lab Sample ID: 240-175883-3
Date Collected: 11/03/22 10:05
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/14/22 17:33*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/14/22 17:33*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*11/14/22 17:33*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 17:33*	*1*

Client Sample ID: MW-82SR_110322
Lab Sample ID: 240-175883-4
Date Collected: 11/03/22 11:05
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 23:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/22 23:40*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*11/14/22 17:56*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/14/22 17:56*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/14/22 17:56*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/14/22 17:56*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/18/2022 8:00:37 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175886-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Job ID: 240-175886-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175886-1

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.2°C and 1.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175886-1	TRIP BLANK_31	Water	11/02/22 00:00	11/04/22 09:40
240-175886-2	MW-85_110222	Water	11/02/22 09:23	11/04/22 09:40
240-175886-3	MW-134S_110222	Water	11/02/22 11:11	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Client Sample ID: TRIP BLANK_31 — Lab Sample ID: 240-175886-1

No Detections.

Client Sample ID: MW-85_110222 — Lab Sample ID: 240-175886-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-134S_110222 — Lab Sample ID: 240-175886-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Client Sample ID: TRIP BLANK_31

Date Collected: 11/02/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175886-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/14/22 17:15*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/14/22 17:15*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 17:15*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/14/22 17:15*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Client Sample ID: MW-85_110222
Date Collected: 11/02/22 09:23
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175886-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/14/22 19:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 17:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 17:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 17:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 17:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 17:36	1
Vinyl chloride	**3.9**		1.0	0.45	ug/L			11/15/22 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/15/22 17:36*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/15/22 17:36*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/15/22 17:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 17:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Client Sample ID: MW-134S_110222
Date Collected: 11/02/22 11:11
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175886-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/22 19:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 21:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 21:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 21:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 21:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/14/22 21:26*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/14/22 21:26*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/14/22 21:26*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 21:26*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175886-1	TRIP BLANK_31	97	79	93	95
240-175886-2	MW-85_110222	89	89	97	103
240-175886-3	MW-134S_110222	102	77	92	98
240-175886-3 MS	MW-134S-MS_110222	93	98	98	96
240-175886-3 MSD	MW-134S-MSD_110222	92	96	96	95
240-175931-C-16 MS	Matrix Spike	75	83	96	86
240-175931-C-16 MSD	Matrix Spike Duplicate	74	87	97	88
LCS 240-551823/5	Lab Control Sample	86	93	98	94
LCS 240-552057/5	Lab Control Sample	78	86	100	93
MB 240-551823/8	Method Blank	95	81	93	95
MB 240-552057/8	Method Blank	86	90	98	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175886-2	MW-85_110222	80
240-175886-3	MW-134S_110222	83
240-175886-3 MS	MW-134S-MS_110222	83
240-175886-3 MSD	MW-134S-MSD_110222	85
LCS 240-551905/3	Lab Control Sample	81
MB 240-551905/4	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551823/8
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 15:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 15:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 15:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/14/22 15:59*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/14/22 15:59*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 15:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/14/22 15:59*	*1*

Lab Sample ID: LCS 240-551823/5
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.5		ug/L		106	77 - 123
Tetrachloroethene	25.0	24.2		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	12.5	12.5		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-175886-3 MS
Matrix: Water
Analysis Batch: 551823

Client Sample ID: MW-134S-MS_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.1		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136
Trichloroethene	1.0	U	25.0	22.1		ug/L		89	61 - 124
Vinyl chloride	1.0	U	12.5	10.0		ug/L		80	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175886-3 MS
Matrix: Water
Analysis Batch: 551823

Client Sample ID: MW-134S-MS_110222
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-175886-3 MSD
Matrix: Water
Analysis Batch: 551823

Client Sample ID: MW-134S-MSD_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.3		ug/L		97	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		88	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		94	56 - 136	4	15
Trichloroethene	1.0	U	25.0	21.1		ug/L		85	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	10.0		ug/L		80	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		62 - 137
4-Bromofluorobenzene (Surr)	96		56 - 136
Toluene-d8 (Surr)	96		78 - 122
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: MB 240-552057/8
Matrix: Water
Analysis Batch: 552057

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 14:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 14:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 14:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 14:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 14:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 14:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	86		62 - 137		11/15/22 14:25	1
4-Bromofluorobenzene (Surr)	90		56 - 136		11/15/22 14:25	1
Toluene-d8 (Surr)	98		78 - 122		11/15/22 14:25	1
Dibromofluoromethane (Surr)	102		73 - 120		11/15/22 14:25	1

Lab Sample ID: LCS 240-552057/5
Matrix: Water
Analysis Batch: 552057

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.2		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	77 - 123
Tetrachloroethene	25.0	25.9		ug/L		103	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		101	75 - 124
Trichloroethene	25.0	24.8		ug/L		99	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-552057/5
Matrix: Water
Analysis Batch: 552057

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	23.2		ug/L		93	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-175931-C-16 MS
Matrix: Water
Analysis Batch: 552057

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	10	U	250	246		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	10	U	250	246		ug/L		98	66 - 128		
Tetrachloroethene	240		250	465		ug/L		89	62 - 131		
trans-1,2-Dichloroethene	10	U	250	241		ug/L		96	56 - 136		
Trichloroethene	10	U	250	243		ug/L		97	61 - 124		
Vinyl chloride	10	U	250	214		ug/L		86	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-175931-C-16 MSD
Matrix: Water
Analysis Batch: 552057

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	237		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	10	U	250	244		ug/L		97	66 - 128	1	14
Tetrachloroethene	240		250	454		ug/L		85	62 - 131	2	20
trans-1,2-Dichloroethene	10	U	250	233		ug/L		93	56 - 136	3	15
Trichloroethene	10	U	250	234		ug/L		93	61 - 124	4	15
Vinyl chloride	10	U	250	216		ug/L		87	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*74*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551905/4
Matrix: Water
Analysis Batch: 551905

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/14/22 18:37*	*1*

Lab Sample ID: LCS 240-551905/3
Matrix: Water
Analysis Batch: 551905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.34		ug/L		93	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-175886-3 MS
Matrix: Water
Analysis Batch: 551905

Client Sample ID: MW-134S-MS_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-175886-3 MSD
Matrix: Water
Analysis Batch: 551905

Client Sample ID: MW-134S-MSD_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

GC/MS VOA

Analysis Batch: 551823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175886-1	TRIP BLANK_31	Total/NA	Water	8260D	
240-175886-3	MW-134S_110222	Total/NA	Water	8260D	
MB 240-551823/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551823/5	Lab Control Sample	Total/NA	Water	8260D	
240-175886-3 MS	MW-134S-MS_110222	Total/NA	Water	8260D	
240-175886-3 MSD	MW-134S-MSD_110222	Total/NA	Water	8260D	

Analysis Batch: 551905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175886-2	MW-85_110222	Total/NA	Water	8260D SIM	
240-175886-3	MW-134S_110222	Total/NA	Water	8260D SIM	
MB 240-551905/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551905/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175886-3 MS	MW-134S-MS_110222	Total/NA	Water	8260D SIM	
240-175886-3 MSD	MW-134S-MSD_110222	Total/NA	Water	8260D SIM	

Analysis Batch: 552057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175886-2	MW-85_110222	Total/NA	Water	8260D	
MB 240-552057/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552057/5	Lab Control Sample	Total/NA	Water	8260D	
240-175931-C-16 MS	Matrix Spike	Total/NA	Water	8260D	
240-175931-C-16 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Client Sample ID: TRIP BLANK_31

Lab Sample ID: 240-175886-1
Matrix: Water
Date Collected: 11/02/22 00:00
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 17:15

Client Sample ID: MW-85_110222

Lab Sample ID: 240-175886-2
Matrix: Water
Date Collected: 11/02/22 09:23
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552057	SAM	EET CAN	11/15/22 17:36
Total/NA	Analysis	8260D SIM		1	551905	CS	EET CAN	11/14/22 19:27

Client Sample ID: MW-134S_110222

Lab Sample ID: 240-175886-3
Matrix: Water
Date Collected: 11/02/22 11:11
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 21:26
Total/NA	Analysis	8260D SIM		1	551905	CS	EET CAN	11/14/22 19:53

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175886-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	DW / NPDES / RCRA / Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Leticia Ferreira	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04					
PO # 30146655.402.04					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_31		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-85-110222	11/04/22	0923		5						5					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-134S_110222	11/04/22	1111		5						5					N	G	X	X	X	X	X	X	X	
MW-134S_MS_110222	11/04/22	1111		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-134S_MSD_110272	11/02/22	1111		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-175886 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained): Return to Client / Disposal By Lab / Archi

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati ROW, ~~Stark~~ Stark rd ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leticia Ferreira	Arcadis	11/02/22 16:40	Pon Cold Storage	Arcadis	11/02/22 16:40
Jonmeet Dang	Arcadis	11/3/22 1500			11/3/22 1500
		11/3/22 1530	Received in Laboratory by:	EETNC	11-4-22 0940

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 173886
Barberton Facility

Client Arcadis Site Name LTP

Cooler Received on _____ Opened on _____

Cooler unpacked by: [illegible]

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? [●] ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # B226901VB (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 173886

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.5	1.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/18/2022 8:00:37 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175886-1
Sample date: 2022-11-02
Report received by CADENA: 2022-11-18
Initial Data Verification completed by CADENA: 2022-11-18
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175886-1

		Sample Name:	TRIP BLANK_31				MW-85_110222				MW-134S_110222			
		Lab Sample ID:	2401758861				2401758862				2401758863			
		Sample Date:	11/2/2022				11/2/2022				11/2/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.9	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

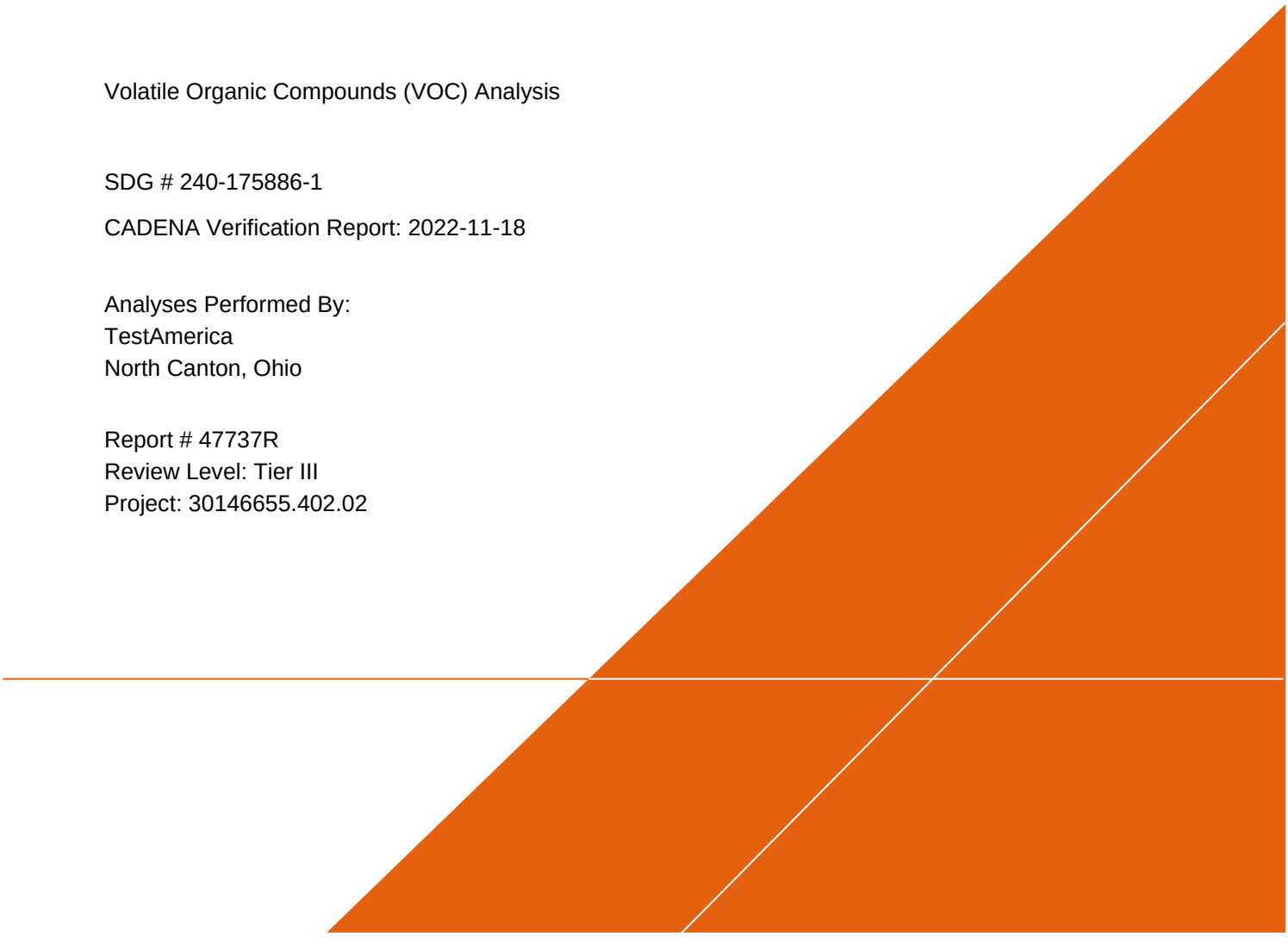
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175886-1

CADENA Verification Report: 2022-11-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47737R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175886-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_31	240-175886-1	Water	11/02/22		X	
MW-85_110222	240-175886-2	Water	11/02/22		X	X
MW-134S_110222	240-175886-3	Water	11/02/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 29, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehiea Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_31		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-85-110222	11/04/22	0923		5						5					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-1345_110222	11/04/22	1111		5						5					N	G	X	X	X	X	X	X	X	
MW-1345_MS_110222	11/04/22	1111		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-1345_MSD_110272	11/02/22	1111		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-175886 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained): Return to Client; Disposal By Lab; Archi

Special Instructions/QC Requirements & Comments:

Sample Address: Rosati ROW, ~~Stark~~ Stark rd ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehiea Ferreira	Arcadis	11/02/22 16:40	Pon Cold Storage	Arcadis	11/02/22 16:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Long	Arcadis	11/3/22 1500			11/3/22 1500
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/3/22 1530		EGTNC	11-4-22 0940

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Client Sample ID: TRIP BLANK_31

Lab Sample ID: 240-175886-1
Date Collected: 11/02/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/14/22 17:15*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/14/22 17:15*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 17:15*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/14/22 17:15*	*1*

Client Sample ID: MW-85_110222

Lab Sample ID: 240-175886-2
Date Collected: 11/02/22 09:23
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/14/22 19:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 17:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 17:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 17:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 17:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 17:36	1
Vinyl chloride	**3.9**		1.0	0.45	ug/L			11/15/22 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/15/22 17:36*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/15/22 17:36*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/15/22 17:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 17:36*	*1*

Client Sample ID: MW-134S_110222

Lab Sample ID: 240-175886-3
Date Collected: 11/02/22 11:11
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/22 19:53*	*1*

Client Sample ID: MW-134S_110222
Lab Sample ID: 240-175886-3

Date Collected: 11/02/22 11:11
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 21:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 21:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 21:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 21:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/14/22 21:26*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/14/22 21:26*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/14/22 21:26*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 21:26*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/18/2022 8:01:11 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175888-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Job ID: 240-175888-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175888-1

Receipt
The samples were received on 11/4/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.2°C and 1.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175888-1	TRIP BLANK_03	Water	11/02/22 00:00	11/04/22 09:40
240-175888-2	MW-101S_110222	Water	11/02/22 10:30	11/04/22 09:40
240-175888-3	MW-75D_110222	Water	11/02/22 11:45	11/04/22 09:40
240-175888-4	MW-75SR_110222	Water	11/02/22 12:55	11/04/22 09:40
240-175888-5	MW-100S_110222	Water	11/02/22 14:30	11/04/22 09:40
240-175888-6	DUP-13	Water	11/02/22 00:00	11/04/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: TRIP BLANK_03 — Lab Sample ID: 240-175888-1

No Detections.

Client Sample ID: MW-101S_110222 — Lab Sample ID: 240-175888-2

No Detections.

Client Sample ID: MW-75D_110222 — Lab Sample ID: 240-175888-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.1		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-75SR_110222 — Lab Sample ID: 240-175888-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.71	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-100S_110222 — Lab Sample ID: 240-175888-5

No Detections.

Client Sample ID: DUP-13 — Lab Sample ID: 240-175888-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.63	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: TRIP BLANK_03
Date Collected: 11/02/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175888-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/14/22 17:40*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/14/22 17:40*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 17:40*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/14/22 17:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: MW-101S_110222
Date Collected: 11/02/22 10:30
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175888-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*11/14/22 21:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 21:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 21:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 21:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/14/22 21:52*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/14/22 21:52*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 21:52*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/14/22 21:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: MW-75D_110222
Date Collected: 11/02/22 11:45
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175888-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.1		2.0	0.86	ug/L			11/14/22 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/22 21:34*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 22:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 22:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 22:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:17	1
Vinyl chloride	2.5		1.0	0.45	ug/L			11/14/22 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/14/22 22:17*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/14/22 22:17*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 22:17*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/14/22 22:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: MW-75SR_110222
Date Collected: 11/02/22 12:55
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175888-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 21:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*11/14/22 21:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 22:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 22:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 22:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:43	1
Vinyl chloride	**0.71**	**J**	1.0	0.45	ug/L			11/14/22 22:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/14/22 22:43*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/14/22 22:43*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/14/22 22:43*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/14/22 22:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: MW-100S_110222
Date Collected: 11/02/22 14:30
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175888-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/14/22 22:24*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/15/22 15:08*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/15/22 15:08*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/15/22 15:08*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/15/22 15:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: DUP-13
Date Collected: 11/02/22 00:00
Date Received: 11/04/22 09:40

Lab Sample ID: 240-175888-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/12/22 17:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:31	1
Vinyl chloride	**0.63**	**J**	1.0	0.45	ug/L			11/15/22 15:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/15/22 15:31*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/15/22 15:31*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/15/22 15:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/15/22 15:31*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175886-L-3 MS	Matrix Spike	93	98	98	96
240-175886-N-3 MSD	Matrix Spike Duplicate	92	96	96	95
240-175888-1	TRIP BLANK_03	101	80	93	99
240-175888-2	MW-101S_110222	104	77	93	101
240-175888-3	MW-75D_110222	103	79	93	102
240-175888-4	MW-75SR_110222	103	79	94	100
240-175888-5	MW-100S_110222	107	91	106	100
240-175888-5 MS	MW-100S-MS_110222	99	98	108	94
240-175888-5 MSD	MW-100S-MSD_110222	98	100	109	95
240-175888-6	DUP-13	107	89	106	98
LCS 240-551823/5	Lab Control Sample	86	93	98	94
LCS 240-551976/5	Lab Control Sample	99	103	108	96
MB 240-551823/8	Method Blank	95	81	93	95
MB 240-551976/8	Method Blank	104	93	106	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175790-G-5 MS	Matrix Spike	114
240-175790-M-5 MSD	Matrix Spike Duplicate	119
240-175886-G-3 MS	Matrix Spike	83
240-175886-M-3 MSD	Matrix Spike Duplicate	85
240-175888-2	MW-101S_110222	84
240-175888-3	MW-75D_110222	83
240-175888-4	MW-75SR_110222	85
240-175888-5	MW-100S_110222	81
240-175888-5 MS	MW-100S-MS_110222	84
240-175888-5 MSD	MW-100S-MSD_110222	83
240-175888-6	DUP-13	119
LCS 240-551688/3	Lab Control Sample	117
LCS 240-551905/3	Lab Control Sample	81
MB 240-551688/4	Method Blank	118
MB 240-551905/4	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551823/8
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 15:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 15:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 15:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/14/22 15:59*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/14/22 15:59*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 15:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/14/22 15:59*	*1*

Lab Sample ID: LCS 240-551823/5
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.5		ug/L		106	77 - 123
Tetrachloroethene	25.0	24.2		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	12.5	12.5		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-175886-L-3 MS
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.1		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136
Trichloroethene	1.0	U	25.0	22.1		ug/L		89	61 - 124
Vinyl chloride	1.0	U	12.5	10.0		ug/L		80	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175886-L-3 MS
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-175886-N-3 MSD
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.3		ug/L		97	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		88	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		94	56 - 136	4	15
Trichloroethene	1.0	U	25.0	21.1		ug/L		85	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	10.0		ug/L		80	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		62 - 137
4-Bromofluorobenzene (Surr)	96		56 - 136
Toluene-d8 (Surr)	96		78 - 122
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: MB 240-551976/8
Matrix: Water
Analysis Batch: 551976

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 11:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 11:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 11:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 11:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 11:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 11:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		62 - 137		11/15/22 11:15	1
4-Bromofluorobenzene (Surr)	93		56 - 136		11/15/22 11:15	1
Toluene-d8 (Surr)	106		78 - 122		11/15/22 11:15	1
Dibromofluoromethane (Surr)	98		73 - 120		11/15/22 11:15	1

Lab Sample ID: LCS 240-551976/5
Matrix: Water
Analysis Batch: 551976

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.2		ug/L		86	63 - 134
cis-1,2-Dichloroethene	20.0	16.9		ug/L		85	77 - 123
Tetrachloroethene	20.0	19.8		ug/L		99	76 - 123
trans-1,2-Dichloroethene	20.0	17.1		ug/L		86	75 - 124
Trichloroethene	20.0	17.4		ug/L		87	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-551976/5
Matrix: Water
Analysis Batch: 551976

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	16.7		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175888-5 MS
Matrix: Water
Analysis Batch: 551976

Client Sample ID: MW-100S-MS_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	15.6		ug/L		78	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	15.1		ug/L		75	66 - 128		
Tetrachloroethene	1.0	U	20.0	17.6		ug/L		88	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	15.4		ug/L		77	56 - 136		
Trichloroethene	1.0	U	20.0	15.3		ug/L		77	61 - 124		
Vinyl chloride	1.0	U	20.0	15.1		ug/L		76	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-175888-5 MSD
Matrix: Water
Analysis Batch: 551976

Client Sample ID: MW-100S-MSD_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	16.2		ug/L		81	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	16.5		ug/L		82	56 - 136	7	15
Trichloroethene	1.0	U	20.0	16.2		ug/L		81	61 - 124	6	15
Vinyl chloride	1.0	U	20.0	16.3		ug/L		81	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551688/4
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/12/22 17:07*	*1*

Lab Sample ID: LCS 240-551688/3
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.52		ug/L		95	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*

Lab Sample ID: 240-175790-G-5 MS
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.82		ug/L		98	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*

Lab Sample ID: 240-175790-M-5 MSD
Matrix: Water
Analysis Batch: 551688

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	10	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: MB 240-551905/4
Matrix: Water
Analysis Batch: 551905

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/14/22 18:37*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-551905/3
Matrix: Water
Analysis Batch: 551905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.34		ug/L		93	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-175886-G-3 MS
Matrix: Water
Analysis Batch: 551905

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-175886-M-3 MSD
Matrix: Water
Analysis Batch: 551905

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-175888-5 MS
Matrix: Water
Analysis Batch: 551905

Client Sample ID: MW-100S-MS_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-175888-5 MSD
Matrix: Water
Analysis Batch: 551905

Client Sample ID: MW-100S-MSD_110222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.97		ug/L		100	51 - 153	0	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

GC/MS VOA

Analysis Batch: 551688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175888-6	DUP-13	Total/NA	Water	8260D SIM	
MB 240-551688/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551688/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175790-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175790-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175888-1	TRIP BLANK_03	Total/NA	Water	8260D	
240-175888-2	MW-101S_110222	Total/NA	Water	8260D	
240-175888-3	MW-75D_110222	Total/NA	Water	8260D	
240-175888-4	MW-75SR_110222	Total/NA	Water	8260D	
MB 240-551823/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551823/5	Lab Control Sample	Total/NA	Water	8260D	
240-175886-L-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-175886-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 551905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175888-2	MW-101S_110222	Total/NA	Water	8260D SIM	
240-175888-3	MW-75D_110222	Total/NA	Water	8260D SIM	
240-175888-4	MW-75SR_110222	Total/NA	Water	8260D SIM	
240-175888-5	MW-100S_110222	Total/NA	Water	8260D SIM	
MB 240-551905/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551905/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175886-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175886-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-175888-5 MS	MW-100S-MS_110222	Total/NA	Water	8260D SIM	
240-175888-5 MSD	MW-100S-MSD_110222	Total/NA	Water	8260D SIM	

Analysis Batch: 551976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175888-5	MW-100S_110222	Total/NA	Water	8260D	
240-175888-6	DUP-13	Total/NA	Water	8260D	
MB 240-551976/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551976/5	Lab Control Sample	Total/NA	Water	8260D	
240-175888-5 MS	MW-100S-MS_110222	Total/NA	Water	8260D	
240-175888-5 MSD	MW-100S-MSD_110222	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Client Sample ID: TRIP BLANK_03
Lab Sample ID: 240-175888-1
Date Collected: 11/02/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 17:40

Client Sample ID: MW-101S_110222
Lab Sample ID: 240-175888-2
Date Collected: 11/02/22 10:30
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 21:52
Total/NA	Analysis	8260D SIM		1	551905	CS	EET CAN	11/14/22 21:08

Client Sample ID: MW-75D_110222
Lab Sample ID: 240-175888-3
Date Collected: 11/02/22 11:45
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 22:17
Total/NA	Analysis	8260D SIM		1	551905	CS	EET CAN	11/14/22 21:34

Client Sample ID: MW-75SR_110222
Lab Sample ID: 240-175888-4
Date Collected: 11/02/22 12:55
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 22:43
Total/NA	Analysis	8260D SIM		1	551905	CS	EET CAN	11/14/22 21:59

Client Sample ID: MW-100S_110222
Lab Sample ID: 240-175888-5
Date Collected: 11/02/22 14:30
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551976	TJL1	EET CAN	11/15/22 15:08
Total/NA	Analysis	8260D SIM		1	551905	CS	EET CAN	11/14/22 22:24

Client Sample ID: DUP-13
Lab Sample ID: 240-175888-6
Date Collected: 11/02/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551976	TJL1	EET CAN	11/15/22 15:31
Total/NA	Analysis	8260D SIM		1	551688	CS	EET CAN	11/12/22 17:55

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175888-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2 DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_03	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-101S_110222	11/2/22	1030		6						6					N	G	X	X	X	X	X	X	Y	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-75D_110222		1145		6						6					N	G	X	X	X	X	X	X	Y	
MW-75SR_110222		1255		6						6					N	G	X	X	X	X	X	X	Y	
MW-100S_110222		1430		6						6					N	G	X	X	X	X	X	X	X	
MW-100S-MS_110222		1430		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-100S-MSD_110222		1430		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
DUP-13	—	—		6						6					N	G	X	X	X	X	X	X	X	—

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer t: Return to Client; Disposal By Lab; Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: Belden Ct ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

240-175888 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam S	Arcadis	11/1/22 1550	Novi Cold storage	Arcadis	11/1/22 1550
Sommer Kay	Arcadis	11/3/22 1500		EETA	11/3/22 1500
	EETA	11/3/22 1530	Received in Laboratory by:	EETNC	11-4-22 0940

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 175888
Barberton Facility

Client Arcadis Site Name LTP Cooler unpacked by: Steve

Cooler Received on _____ Opened on _____

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286791
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. (Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) 1X40TB03 and 1X40MW101S were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 175888

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.5	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.2	0.9	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/18/2022 8:01:11 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 18, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175888-1
Sample date: 2022-11-02
Report received by CADENA: 2022-11-18
Initial Data Verification completed by CADENA: 2022-11-18
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175888-1

		Sample Name:	TRIP BLANK_03				MW-101S_110222				MW-75D_110222				MW-75SR_110222				MW-100S_110222				DUP-13			
		Lab Sample ID:	2401758881				2401758882				2401758883				2401758884				2401758885				2401758886			
		Sample Date:	11/2/2022				11/2/2022				11/2/2022				11/2/2022				11/2/2022				11/2/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.5	1.0	ug/l	---	0.71	1.0	ug/l	J	ND	1.0	ug/l	---	0.63	1.0	ug/l	J
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	2.1	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

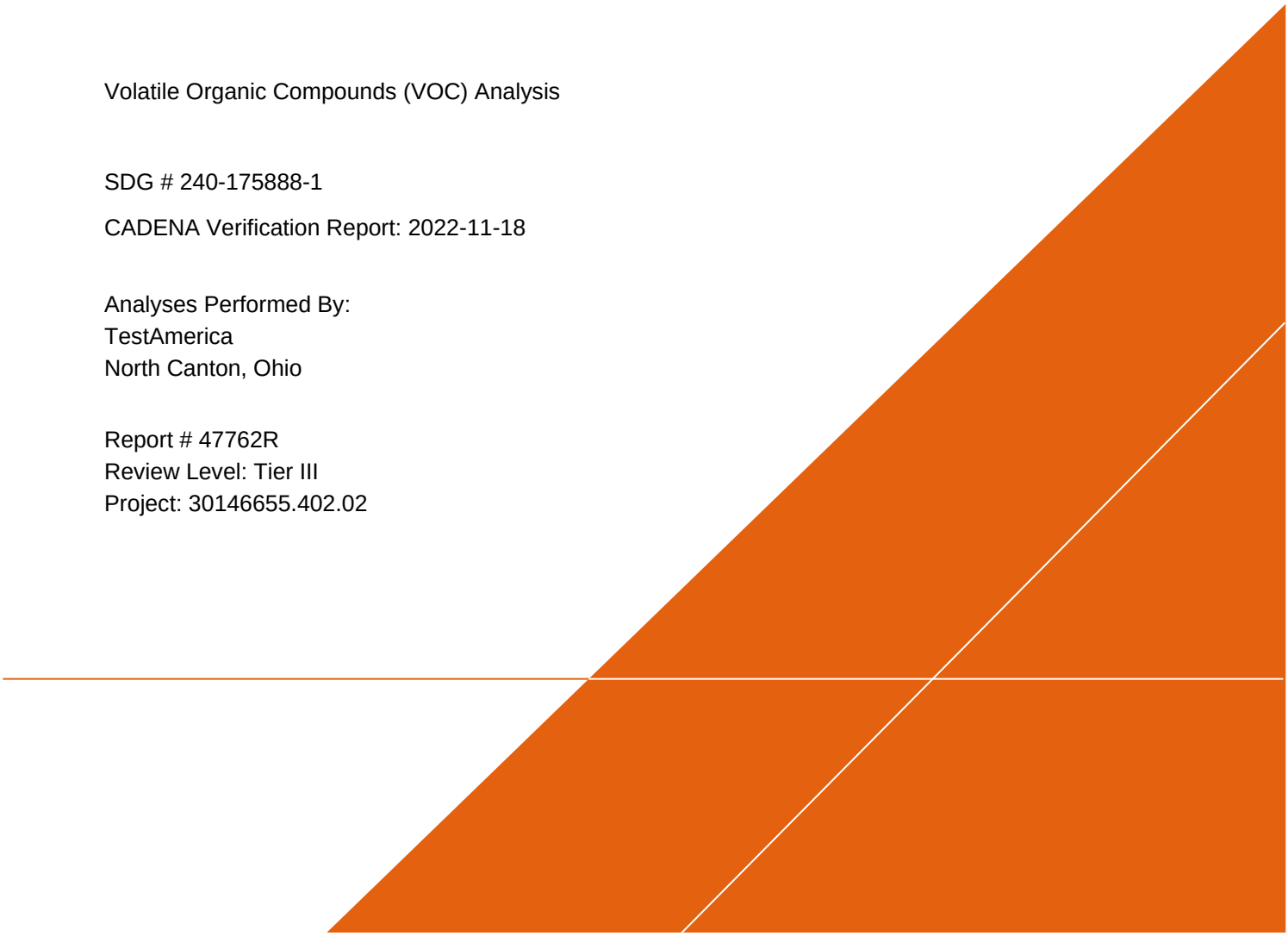
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175888-1

CADENA Verification Report: 2022-11-18

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47762R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175888-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_03	240-175888-1	Water	11/02/22		X	
MW-101S_110222	240-175888-2	Water	11/02/22		X	X
MW-75D_110222	240-175888-3	Water	11/02/22		X	X
MW-75SR_110222	240-175888-4	Water	11/02/22		X	X
MW-100S_110222	240-175888-5	Water	11/02/22		X	X
DUP-13	240-175888-6	Water	11/02/22	MW-75SR_110222	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-75SR_110222 / DUP-13	Vinyl chloride	0.71 J	0.63 J	AC

Notes:

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

DATA REVIEW

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 02, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn(Ac) NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_03	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-101S_110222	11/2/22	1030		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-75D_110222		1145		6						6					N	G	X	X	X	X	X	X	X	
MW-75SR_110222		1255		6						6					N	G	X	X	X	X	X	X	X	
MW-100S_110222		1430		6						6					N	G	X	X	X	X	X	X	X	
MW-100S-MS_110222		1430		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-100S-MSD_110222		1430		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
DUP-13	—	—		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer t: Return to Client; Disposal By Lab; Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: Belden Ct ROW
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested.

240-175888 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam S	Arcadis	11/1/22 1550	Novi Coldstorage	Arcadis	11/1/22 1550
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/3/22 1500		FEDEX	11/3/22 1500
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	FEDEX	11/3/22 1530		EBTNC	11-4-22 0940

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11/18/2022
8:00 AM

Client Sample ID: TRIP BLANK_03
Lab Sample ID: 240-175888-1
Date Collected: 11/02/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 17:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 17:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 17:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 17:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/14/22 17:40*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/14/22 17:40*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 17:40*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/14/22 17:40*	*1*

Client Sample ID: MW-101S_110222
Lab Sample ID: 240-175888-2
Date Collected: 11/02/22 10:30
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*11/14/22 21:08*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 21:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 21:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 21:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 21:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/14/22 21:52*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/14/22 21:52*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 21:52*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/14/22 21:52*	*1*

Client Sample ID: MW-75D_110222
Lab Sample ID: 240-175888-3
Date Collected: 11/02/22 11:45
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.1**		2.0	0.86	ug/L			11/14/22 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*11/14/22 21:34*	*1*

Client Sample ID: MW-75D_110222
Lab Sample ID: 240-175888-3
Date Collected: 11/02/22 11:45
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 22:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 22:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 22:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:17	1
Vinyl chloride	**2.5**		1.0	0.45	ug/L			11/14/22 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/14/22 22:17*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/14/22 22:17*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 22:17*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*11/14/22 22:17*	*1*

Client Sample ID: MW-75SR_110222
Lab Sample ID: 240-175888-4
Date Collected: 11/02/22 12:55
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 21:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*11/14/22 21:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 22:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 22:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 22:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 22:43	1
Vinyl chloride	**0.71**	**J**	1.0	0.45	ug/L			11/14/22 22:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/14/22 22:43*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/14/22 22:43*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/14/22 22:43*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/14/22 22:43*	*1*

Client Sample ID: MW-100S_110222
Lab Sample ID: 240-175888-5
Date Collected: 11/02/22 14:30
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/14/22 22:24*	*1*

Client Sample ID: MW-100S_110222
Lab Sample ID: 240-175888-5

Date Collected: 11/02/22 14:30
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/15/22 15:08*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/15/22 15:08*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/15/22 15:08*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/15/22 15:08*	*1*

Client Sample ID: DUP-13
Lab Sample ID: 240-175888-6

Date Collected: 11/02/22 00:00
Matrix: Water
Date Received: 11/04/22 09:40

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*		*11/12/22 17:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:31	1
Vinyl chloride	**0.63**	**J**	1.0	0.45	ug/L			11/15/22 15:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/15/22 15:31*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/15/22 15:31*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/15/22 15:31*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/15/22 15:31*	*1*

Default Detection Limits

Client: ARCADIS U.S., Inc.
Job ID: 240-175888-1
Project/Site: Ford LTP - Off Site

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	RL	MDL	Units
1,4-Dioxane	2.0	0.86	ug/L

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	RL	MDL	Units
1,1-Dichloroethene	1.0	0.49	ug/L
cis-1,2-Dichloroethene	1.0	0.46	ug/L
Tetrachloroethene	1.0	0.44	ug/L
trans-1,2-Dichloroethene	1.0	0.51	ug/L
Trichloroethene	1.0	0.44	ug/L
Vinyl chloride	1.0	0.45	ug/L

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/18/2022 8:12:13 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-175943-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

my EOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-175943-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175943-1

Receipt
The samples were received on 11/5/2022 11:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.4°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following samples was outside the upper control limit: MW-76S_110322 (240-175943-3). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175943-1	TRIP BLANK_37	Water	11/03/22 00:00	11/05/22 11:00
240-175943-2	MW-76_110322	Water	11/03/22 14:25	11/05/22 11:00
240-175943-3	MW-76S_110322	Water	11/03/22 15:35	11/05/22 11:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Client Sample ID: TRIP BLANK_37 — Lab Sample ID: 240-175943-1

No Detections.

Client Sample ID: MW-76_110322 — Lab Sample ID: 240-175943-2

No Detections.

Client Sample ID: MW-76S_110322 — Lab Sample ID: 240-175943-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Client Sample ID: TRIP BLANK_37

Date Collected: 11/03/22 00:00
Date Received: 11/05/22 11:00

Lab Sample ID: 240-175943-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/15/22 19:15*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/15/22 19:15*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/15/22 19:15*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/15/22 19:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Client Sample ID: MW-76_110322
Date Collected: 11/03/22 14:25
Date Received: 11/05/22 11:00

Lab Sample ID: 240-175943-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 14:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*		*11/13/22 14:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 19:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 19:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 19:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/15/22 19:39*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/15/22 19:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/15/22 19:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/15/22 19:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Client Sample ID: MW-76S_110322
Date Collected: 11/03/22 15:35
Date Received: 11/05/22 11:00

Lab Sample ID: 240-175943-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*127*	*S1+*	*66 - 120*		*11/13/22 15:13*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 20:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 20:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 20:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 20:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/15/22 20:04*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/15/22 20:04*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/15/22 20:04*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/15/22 20:04*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175943-1	TRIP BLANK_37	92	101	99	98
240-175943-2	MW-76_110322	92	101	98	96
240-175943-3	MW-76S_110322	89	97	95	93
240-175949-B-3 MS	Matrix Spike	88	102	98	96
240-175949-B-3 MSD	Matrix Spike Duplicate	91	99	96	96
LCS 240-551983/5	Lab Control Sample	93	103	97	97
MB 240-551983/8	Method Blank	90	100	96	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175891-G-8 MS	Matrix Spike	106
240-175891-O-8 MSD	Matrix Spike Duplicate	112
240-175943-2	MW-76_110322	110
240-175943-3	MW-76S_110322	127 S1+
LCS 240-551689/3	Lab Control Sample	119
MB 240-551689/4	Method Blank	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551983/8
Matrix: Water
Analysis Batch: 551983

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 13:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 13:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 13:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 13:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 13:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 13:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/15/22 13:33*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/15/22 13:33*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/15/22 13:33*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/15/22 13:33*	*1*

Lab Sample ID: LCS 240-551983/5
Matrix: Water
Analysis Batch: 551983

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	19.9		ug/L		99	63 - 134		
cis-1,2-Dichloroethene			20.0	19.7		ug/L		98	77 - 123		
Tetrachloroethene			20.0	20.5		ug/L		102	76 - 123		
trans-1,2-Dichloroethene			20.0	19.5		ug/L		97	75 - 124		
Trichloroethene			20.0	20.0		ug/L		100	70 - 122		
Vinyl chloride			20.0	17.3		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-175949-B-3 MS
Matrix: Water
Analysis Batch: 551983

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	4.0	U	80.0	75.4		ug/L		94	56 - 135		
cis-1,2-Dichloroethene	110		80.0	179		ug/L		90	66 - 128		
Tetrachloroethene	140		80.0	206		ug/L		84	62 - 131		
Trichloroethene	93		80.0	162		ug/L		87	61 - 124		
Vinyl chloride	4.6		80.0	69.8		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175949-B-3 MSD
Matrix: Water
Analysis Batch: 551983

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	4.0	U	80.0	77.0		ug/L		96	56 - 135	2	26
cis-1,2-Dichloroethene	110		80.0	179		ug/L		91	66 - 128	0	14
Tetrachloroethene	140		80.0	208		ug/L		86	62 - 131	1	20
Trichloroethene	93		80.0	163		ug/L		87	61 - 124	0	15
Vinyl chloride	4.6		80.0	70.6		ug/L		83	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551689/4
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 05:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/13/22 05:54*	*1*

Lab Sample ID: LCS 240-551689/3
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.78		ug/L		98	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-175891-G-8 MS
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.1		10.0	11.7		ug/L		96	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-175891-O-8 MSD
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	11.5		ug/L		94	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

GC/MS VOA

Analysis Batch: 551689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175943-2	MW-76_110322	Total/NA	Water	8260D SIM	
240-175943-3	MW-76S_110322	Total/NA	Water	8260D SIM	
MB 240-551689/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551689/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175891-G-8 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175891-O-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175943-1	TRIP BLANK_37	Total/NA	Water	8260D	
240-175943-2	MW-76_110322	Total/NA	Water	8260D	
240-175943-3	MW-76S_110322	Total/NA	Water	8260D	
MB 240-551983/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551983/5	Lab Control Sample	Total/NA	Water	8260D	
240-175949-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-175949-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Client Sample ID: TRIP BLANK_37

Lab Sample ID: 240-175943-1
Matrix: Water
Date Collected: 11/03/22 00:00
Date Received: 11/05/22 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551983	HMB	EET CAN	11/15/22 19:15

Client Sample ID: MW-76_110322

Lab Sample ID: 240-175943-2
Matrix: Water
Date Collected: 11/03/22 14:25
Date Received: 11/05/22 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551983	HMB	EET CAN	11/15/22 19:39
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 14:48

Client Sample ID: MW-76S_110322

Lab Sample ID: 240-175943-3
Matrix: Water
Date Collected: 11/03/22 15:35
Date Received: 11/05/22 11:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551983	HMB	EET CAN	11/15/22 20:04
Total/NA	Analysis	8260D SIM		1	551689	CS	EET CAN	11/13/22 15:13

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-175943-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks; 2 weeks ✓; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
✓ TRIP BLANK_37	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
✓ MW-76_110322	11/3/22	14:25		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
✓ MW-76S_110322	11/3/22	15:35		6						6					W	G	X	X	X	X	X	X	X	" "

240-175943 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/3/22 16:20	NOVI cold storage	Arcadis	11/3/22 1620
Sommer Stacy	Arcad	11/4/22 1230	Jen Hall	EEN	11/4/22 1229pm
Jen Hall	EEN	11/4/22 1230pm	Receive in Laboratory by:	Company:	Date/Time:

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11/18/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 175943
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 11-5-22 Opened on 11-5-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 1-4 °C Corrected Cooler Temp. 1-2 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # (Yes) No
17. Was a LL Hg or Me Hg trip blank present? (Yes) No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/18/2022 8:12:13 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 20, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175943-1
Sample date: 2022-11-03
Report received by CADENA: 2022-11-18
Initial Data Verification completed by CADENA: 2022-11-20
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC sample -002 surrogate recovery outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175943-1

		Sample Name:	TRIP BLANK_37				MW-76_110322				MW-76S_110322			
		Lab Sample ID:	2401759431				2401759432				2401759433			
		Sample Date:	11/3/2022				11/3/2022				11/3/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

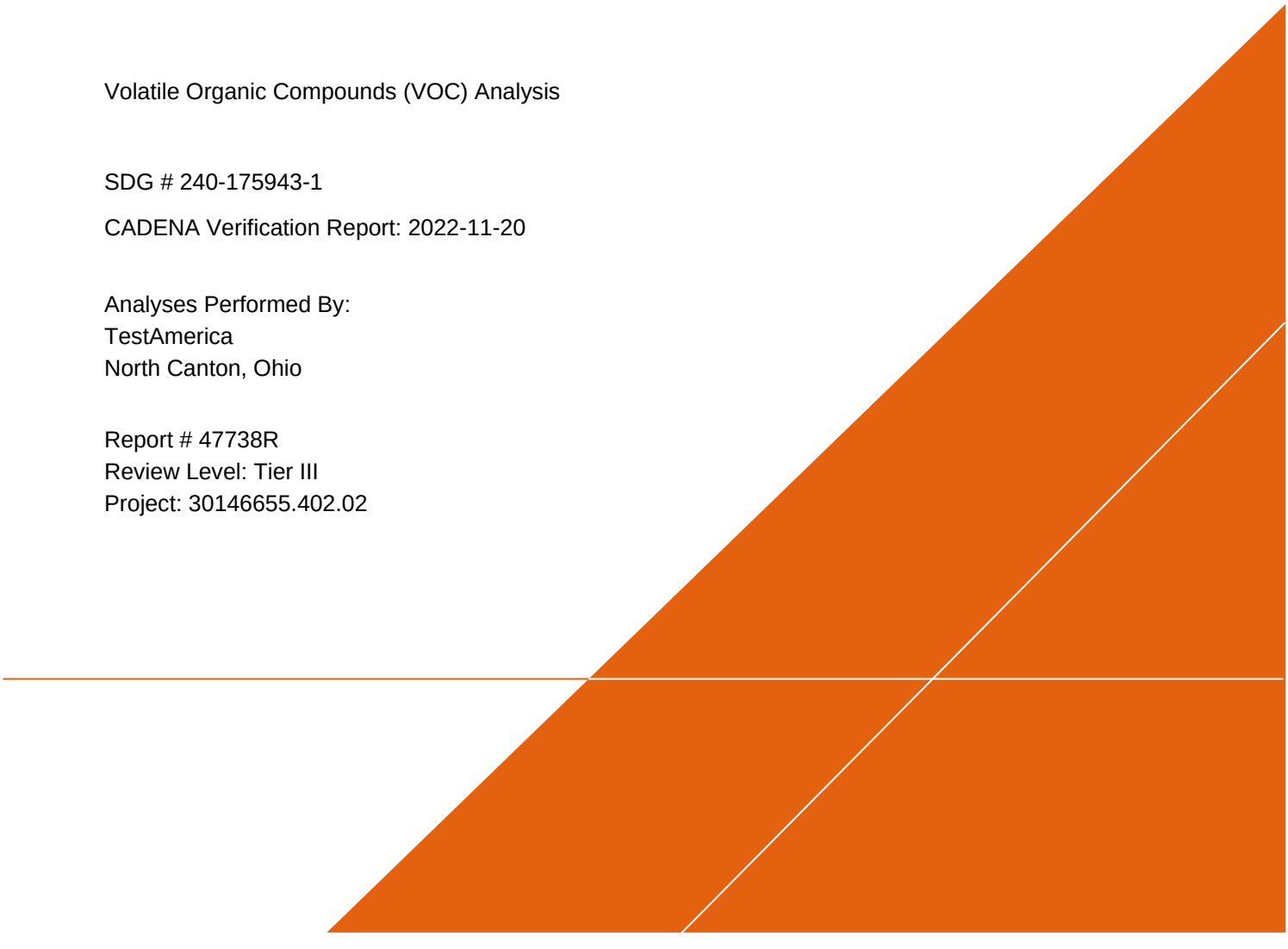
Volatile Organic Compounds (VOC) Analysis

SDG # 240-175943-1

CADENA Verification Report: 2022-11-20

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47738R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-175943-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_37	240-175943-1	Water	11/03/22		X	
MW-76_110322	240-175943-2	Water	11/03/22		X	X
MW-76S_110322	240-175943-3	Water	11/03/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 29, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240				Walk-in client
Project Name: Ford LTP Off-Site	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day		Lab sampling
Project Number: 30146655.402.04	Method of Shipment/Carrier:			Job/SDG No:
PO # 30146655.402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_37	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-76_110322	11/3/22	14:25		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-76S_110322	11/3/22	15:35		6						6					W	G	X	X	X	X	X	X	X	" "

240-175943 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Belden ct ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Szpaichler	Arcadis	11/3/22 16:20	Novi cold storage	Arcadis	11/3/22 1620
Sommer Stacy	Arcad	11/4/22 1230		EEA	11/4/22 1229pm
Ken Hall	EEA	11/4/22 1230pm	Received in Laboratory by:	EENC	11/5/22 0800

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Client Sample ID: TRIP BLANK_37

Lab Sample ID: 240-175943-1
Date Collected: 11/03/22 00:00
Matrix: Water
Date Received: 11/05/22 11:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 19:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 19:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 19:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/15/22 19:15*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/15/22 19:15*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/15/22 19:15*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/15/22 19:15*	*1*

Client Sample ID: MW-76_110322

Lab Sample ID: 240-175943-2
Date Collected: 11/03/22 14:25
Matrix: Water
Date Received: 11/05/22 11:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 14:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*		*11/13/22 14:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 19:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 19:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 19:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 19:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/15/22 19:39*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/15/22 19:39*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/15/22 19:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/15/22 19:39*	*1*

Client Sample ID: MW-76S_110322

Lab Sample ID: 240-175943-3
Date Collected: 11/03/22 15:35
Matrix: Water
Date Received: 11/05/22 11:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*127*	*S1+*	*66 - 120*		*11/13/22 15:13*	*1*

Client Sample ID: MW-76S_110322
Lab Sample ID: 240-175943-3

Date Collected: 11/03/22 15:35
Matrix: Water
Date Received: 11/05/22 11:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 20:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 20:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 20:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 20:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 20:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/15/22 20:04*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/15/22 20:04*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/15/22 20:04*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/15/22 20:04*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/18/2022 8:14:13 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176032-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Appendix 21

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176032-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176032-1

Receipt
The samples were received on 11/8/2022 10:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.0°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-552054 recovered above the upper control limit for 1,1-Dichloroethene. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_41 (240-176032-1), MW-84_110422 (240-176032-2), MW-84S_110422 (240-176032-3), (CCV 240-552054/4), (CCVIS 240-552054/3), (LCS 240-552054/5), (LCS 240-552054/6), (MB 240-552054/8), (240-176033-B-2), (240-176033-F-2 MS) and (240-176033-L-2 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176032-1	TRIP BLANK_41	Water	11/04/22 00:00	11/08/22 10:50
240-176032-2	MW-84_110422	Water	11/04/22 10:10	11/08/22 10:50
240-176032-3	MW-84S_110422	Water	11/04/22 11:25	11/08/22 10:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Client Sample ID: TRIP BLANK_41 — Lab Sample ID: 240-176032-1

No Detections.

Client Sample ID: MW-84_110422 — Lab Sample ID: 240-176032-2

No Detections.

Client Sample ID: MW-84S_110422 — Lab Sample ID: 240-176032-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Client Sample ID: TRIP BLANK_41
Date Collected: 11/04/22 00:00
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176032-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 16:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 16:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 16:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/15/22 16:43*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/15/22 16:43*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 16:43*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/15/22 16:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Client Sample ID: MW-84_110422
Date Collected: 11/04/22 10:10
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176032-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 02:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/15/22 02:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 22:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 22:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 22:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 22:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/15/22 22:11*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/15/22 22:11*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 22:11*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/15/22 22:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Client Sample ID: MW-84S_110422

Date Collected: 11/04/22 11:25
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176032-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 12:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/16/22 12:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 22:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 22:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 22:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/15/22 22:36*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/15/22 22:36*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/15/22 22:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 22:36*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176032-1	TRIP BLANK_41	103	80	93	97
240-176032-2	MW-84_110422	104	77	93	101
240-176032-3	MW-84S_110422	107	77	95	103
240-176033-F-2 MS	Matrix Spike	92	99	98	94
240-176033-L-2 MSD	Matrix Spike Duplicate	90	97	96	92
LCS 240-552054/5	Lab Control Sample	90	94	97	93
MB 240-552054/8	Method Blank	101	81	96	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175884-G-2 MS	Matrix Spike	110
240-175884-M-2 MSD	Matrix Spike Duplicate	112
240-176032-2	MW-84_110422	109
240-176032-3	MW-84S_110422	76
500-224931-D-8 MS	Matrix Spike	79
500-224931-D-8 MSD	Matrix Spike Duplicate	79
LCS 240-551906/3	Lab Control Sample	105
LCS 240-552118/3	Lab Control Sample	81
MB 240-551906/4	Method Blank	120
MB 240-552118/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552054/8
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/15/22 15:02*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/15/22 15:02*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/15/22 15:02*	*1*

Lab Sample ID: LCS 240-552054/5
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.0		ug/L		108	63 - 134
cis-1,2-Dichloroethene	25.0	26.5		ug/L		106	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.3		ug/L		105	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122
Vinyl chloride	12.5	10.4		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176033-F-2 MS
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.8		ug/L		111	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	25.0	24.9		ug/L		100	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 136
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176033-F-2 MS
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176033-L-2 MSD
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.9		ug/L		112	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 136	4	15
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124	2	15
Vinyl chloride	1.0	U	12.5	9.93		ug/L		79	43 - 157	5	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551906/4
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*66 - 120*		*11/14/22 18:27*	*1*

Lab Sample ID: LCS 240-551906/3
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.69		ug/L		97	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-175884-G-2 MS
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	110		66 - 120

Lab Sample ID: 240-175884-M-2 MSD
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	112		66 - 120

Lab Sample ID: MB 240-552118/4
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 11:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		66 - 120		11/16/22 11:14	1

Lab Sample ID: LCS 240-552118/3
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.22		ug/L		92	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

Lab Sample ID: 500-224931-D-8 MS
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	370		30.0	449	4	ug/L		257	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		66 - 120

Lab Sample ID: 500-224931-D-8 MSD
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	370		30.0	402	4	ug/L		102	51 - 153	11	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-224931-D-8 MSD
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

GC/MS VOA

Analysis Batch: 551906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176032-2	MW-84_110422	Total/NA	Water	8260D SIM	
MB 240-551906/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551906/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175884-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175884-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176032-1	TRIP BLANK_41	Total/NA	Water	8260D	
240-176032-2	MW-84_110422	Total/NA	Water	8260D	
240-176032-3	MW-84S_110422	Total/NA	Water	8260D	
MB 240-552054/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552054/5	Lab Control Sample	Total/NA	Water	8260D	
240-176033-F-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176033-L-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 552118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176032-3	MW-84S_110422	Total/NA	Water	8260D SIM	
MB 240-552118/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552118/3	Lab Control Sample	Total/NA	Water	8260D SIM	
500-224931-D-8 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-224931-D-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Client Sample ID: TRIP BLANK_41

Lab Sample ID: 240-176032-1
Matrix: Water
Date Collected: 11/04/22 00:00
Date Received: 11/08/22 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 16:43

Client Sample ID: MW-84_110422

Lab Sample ID: 240-176032-2
Matrix: Water
Date Collected: 11/04/22 10:10
Date Received: 11/08/22 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 22:11
Total/NA	Analysis	8260D SIM		1	551906	CS	EET CAN	11/15/22 02:11

Client Sample ID: MW-84S_110422

Lab Sample ID: 240-176032-3
Matrix: Water
Date Collected: 11/04/22 11:25
Date Received: 11/08/22 10:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 22:36
Total/NA	Analysis	8260D SIM		1	552118	CS	EET CAN	11/16/22 12:55

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176032-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukoriq	TAT if different from below: 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 4		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-84_110422	11/04/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-84s_110422	11/04/22	1125		6						6					N	G	X	X	X	X	X	X	X	1

240-176032 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: ~~34857~~ 35857 Beacon ROW
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukoriq	Arcadis	11/04/22 1407	Arcadis Cold Stor	Arcadis	11/04/22 1407
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/7/22 1000	Jeri Hall	EEPA	11/7/22 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EEPA	11/7/22 1002	Mandaly Blair	eesrc	11-8-22 10:50

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176032
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-8-22 Opened on 11-8-22

Cooler unpacked by: Mandaly

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # elln Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.0 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes No
17. Was a LL Hg or Me Hg trip blank present?	Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 20, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176032-1
Sample date: 2022-11-04
Report received by CADENA: 2022-11-18
Initial Data Verification completed by CADENA: 2022-11-20
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

SIM GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176032-1

		Sample Name:	TRIP BLANK_41				MW-84_110422				MW-84S_110422			
		Lab Sample ID:	2401760321				2401760322				2401760323			
		Sample Date:	11/4/2022				11/4/2022				11/4/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

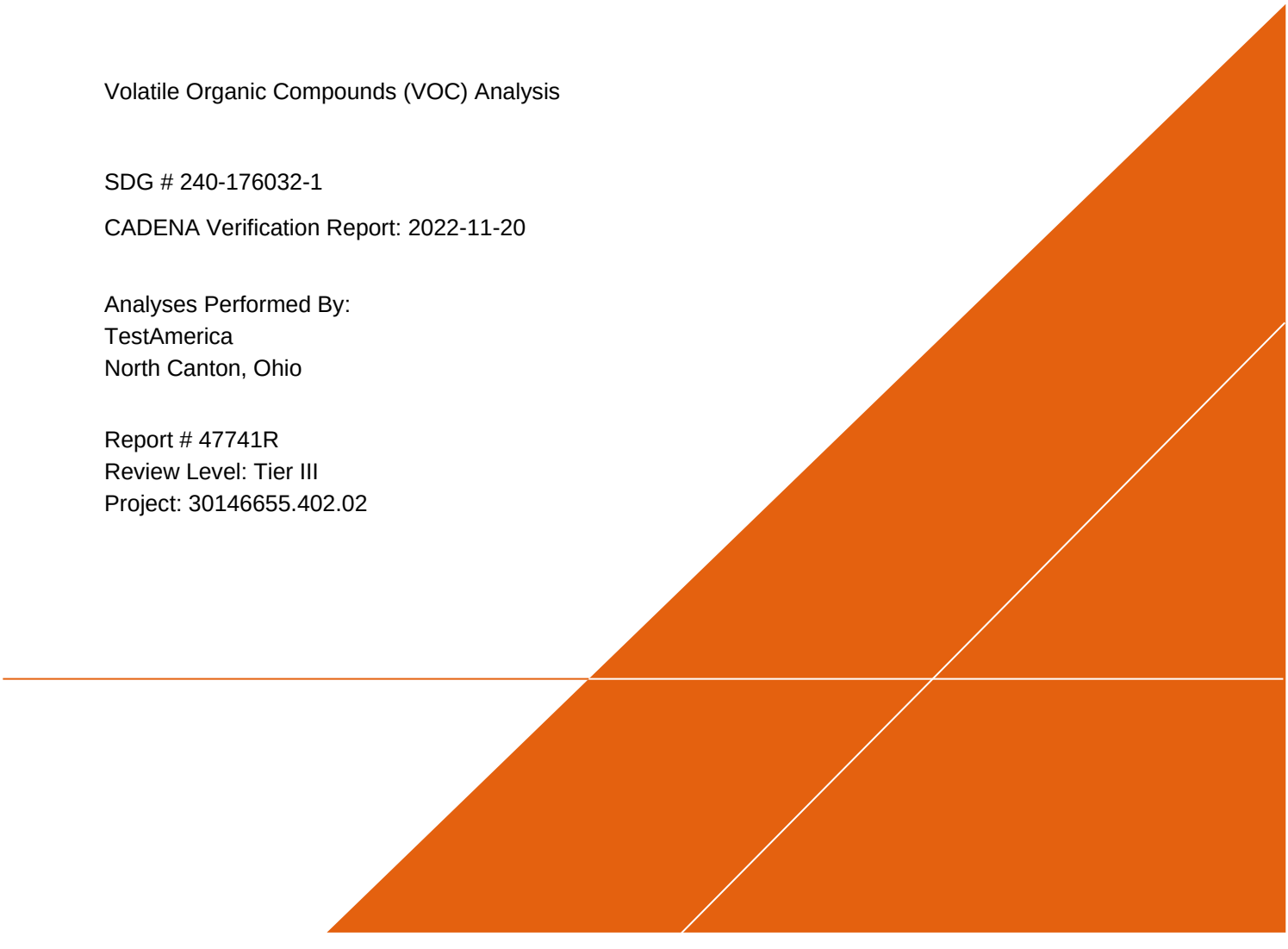
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176032-1

CADENA Verification Report: 2022-11-20

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47741R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176032-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_41	240-176032-1	Water	11/04/22		X	
MW-84_110422	240-176032-2	Water	11/04/22		X	X
MW-84S_110422	240-176032-3	Water	11/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_41 MW-84_110422 MW-84S_110422	Continuous Calibration Verification %D	1,1-Dichloroethene	+20.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: November 30, 2022

PEER REVIEW: Andrew Korycinski

DATE: November 02, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	DW	NPDES	RCRA	Other
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:	
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		1 of 1 COCs	
Phone: 248-994-2240	Sampler Name: Sam Sukoriq	TAT if different from below: 10 day; 3 weeks, ✓ 2 weeks, 1 week, 2 days, 1 day		For lab use only	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Walk-in client	
Project Number: 30146655.402.04	Shipping/Tracking No:			Lab sampling	
PO # 30146655.402.04				Job/SDG No:	

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 4		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-84-110422	11/04/22	1010		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-84s_110422	11/04/22	1125		6						6					N	G	X	X	X	X	X	X	X	1

240-176032 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For [ ] Months

Special Instructions/QC Requirements & Comments:
Sample Address: ~~3485~~ 3485 Beacon ROW
Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203031
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukoriq	Arcadis	11/07/22 1407	Arcadis Cold Stor	Arcadis	11/04/22 1407
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/7/22 1000	Jeri Hall	EEPA	11/7/22 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Jeri Hall	EEPA	11/7/22 1002	Mandaly Blee	eesc	11-8-22 10:50

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Client Sample ID: TRIP BLANK_41
Lab Sample ID: 240-176032-1
Date Collected: 11/04/22 00:00
Matrix: Water
Date Received: 11/08/22 10:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 16:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 16:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 16:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 16:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/15/22 16:43*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/15/22 16:43*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 16:43*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/15/22 16:43*	*1*

Client Sample ID: MW-84_110422
Lab Sample ID: 240-176032-2
Date Collected: 11/04/22 10:10
Matrix: Water
Date Received: 11/08/22 10:50

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 02:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/15/22 02:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 22:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 22:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 22:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 22:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/15/22 22:11*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/15/22 22:11*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 22:11*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/15/22 22:11*	*1*

Client Sample ID: MW-84S_110422
Lab Sample ID: 240-176032-3
Date Collected: 11/04/22 11:25
Matrix: Water
Date Received: 11/08/22 10:50

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 12:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/16/22 12:55*	*1*

Client Sample ID: MW-84S_110422
Lab Sample ID: 240-176032-3

Date Collected: 11/04/22 11:25
Matrix: Water
Date Received: 11/08/22 10:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 22:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 22:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 22:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 22:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/15/22 22:36*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/15/22 22:36*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/15/22 22:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/15/22 22:36*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/22/2022 7:59:52 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176081-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176081-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176081-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4°C and 2.5°C

GC/MS VOA
Method 8260D_SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-551914 was not analyzed due to an instrument fault.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176081-1	TRIP BLANK_88	Water	11/07/22 00:00	11/09/22 09:45
240-176081-2	MW-81_110722	Water	11/07/22 09:31	11/09/22 09:45
240-176081-3	MW-81S_110722	Water	11/07/22 10:22	11/09/22 09:45
240-176081-4	MW-106S_110722	Water	11/07/22 15:10	11/09/22 09:45
240-176081-5	MW-107S_110722	Water	11/07/22 16:42	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Client Sample ID: TRIP BLANK_88 — Lab Sample ID: 240-176081-1

No Detections.

Client Sample ID: MW-81_110722 — Lab Sample ID: 240-176081-2

No Detections.

Client Sample ID: MW-81S_110722 — Lab Sample ID: 240-176081-3

No Detections.

Client Sample ID: MW-106S_110722 — Lab Sample ID: 240-176081-4

No Detections.

Client Sample ID: MW-107S_110722 — Lab Sample ID: 240-176081-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Client Sample ID: TRIP BLANK_88
Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176081-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 16:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 16:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 16:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 16:21*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/16/22 16:21*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 16:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 16:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Client Sample ID: MW-81_110722
Date Collected: 11/07/22 09:31
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176081-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*		*11/15/22 18:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 20:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 20:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 20:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/16/22 20:21*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/22 20:21*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 20:21*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/16/22 20:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Client Sample ID: MW-81S_110722
Date Collected: 11/07/22 10:22
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176081-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/15/22 18:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 20:45*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 20:45*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 20:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Client Sample ID: MW-106S_110722
Date Collected: 11/07/22 15:10
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176081-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 18:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/15/22 18:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 21:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 21:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 21:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 21:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 21:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 21:09*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/16/22 21:09*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 21:09*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 21:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Client Sample ID: MW-107S_110722
Date Collected: 11/07/22 16:42
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176081-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 19:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/15/22 19:17*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/22 15:56*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/22 15:56*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 15:56*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/16/22 15:56*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176069-C-2 MS	Matrix Spike	86	92	99	92
240-176069-F-2 MSD	Matrix Spike Duplicate	85	90	99	93
240-176081-1	TRIP BLANK_88	90	92	99	100
240-176081-2	MW-81_110722	97	94	98	104
240-176081-3	MW-81S_110722	94	93	100	101
240-176081-4	MW-106S_110722	94	92	98	101
240-176081-5	MW-107S_110722	95	95	99	89
240-176087-B-21 MS	Matrix Spike	92	98	99	92
240-176087-B-21 MSD	Matrix Spike Duplicate	92	98	98	92
LCS 240-552229/5	Lab Control Sample	84	92	100	93
LCS 240-552230/4	Lab Control Sample	90	99	95	93
MB 240-552229/8	Method Blank	90	90	98	100
MB 240-552230/7	Method Blank	95	96	99	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176081-2	MW-81_110722	112
240-176081-3	MW-81S_110722	116
240-176081-4	MW-106S_110722	107
240-176081-5	MW-107S_110722	116
LCS 240-551914/3	Lab Control Sample	108
MB 240-551914/4	Method Blank	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552229/8
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 13:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/16/22 13:35*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 13:35*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 13:35*	*1*

Lab Sample ID: LCS 240-552229/5
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.4		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.0		ug/L		100	77 - 123
Tetrachloroethene	25.0	27.2		ug/L		109	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	26.0		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	25.0	25.4		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176069-C-2 MS
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-176069-F-2 MSD
Matrix: Water
Analysis Batch: 552229

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	26.3		ug/L		105	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	24.3		ug/L		97	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: MB 240-552230/7
Matrix: Water
Analysis Batch: 552230

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 13:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 13:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 13:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 13:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 13:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		11/16/22 13:26	1
4-Bromofluorobenzene (Surr)	96		56 - 136		11/16/22 13:26	1
Toluene-d8 (Surr)	99		78 - 122		11/16/22 13:26	1
Dibromofluoromethane (Surr)	92		73 - 120		11/16/22 13:26	1

Lab Sample ID: LCS 240-552230/4
Matrix: Water
Analysis Batch: 552230

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.7		ug/L		95	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.2		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	24.1		ug/L		97	75 - 124
Trichloroethene	25.0	23.8		ug/L		95	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-552230/4
Matrix: Water
Analysis Batch: 552230

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	12.8		ug/L		103	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176087-B-21 MS
Matrix: Water
Analysis Batch: 552230

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	100	U	2500	2030		ug/L		81	56 - 135		
cis-1,2-Dichloroethene	310		2500	2540		ug/L		89	66 - 128		
Tetrachloroethene	1900		2500	3980		ug/L		83	62 - 131		
trans-1,2-Dichloroethene	100	U	2500	2170		ug/L		87	56 - 136		
Trichloroethene	1400		2500	3510		ug/L		84	61 - 124		
Vinyl chloride	100	U	1250	1300		ug/L		104	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-176087-B-21 MSD
Matrix: Water
Analysis Batch: 552230

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	100	U	2500	2190		ug/L		88	56 - 135	8	26
cis-1,2-Dichloroethene	310		2500	2650		ug/L		94	66 - 128	4	14
Tetrachloroethene	1900		2500	3990		ug/L		83	62 - 131	0	20
trans-1,2-Dichloroethene	100	U	2500	2280		ug/L		91	56 - 136	5	15
Trichloroethene	1400		2500	3610		ug/L		88	61 - 124	3	15
Vinyl chloride	100	U	1250	1320		ug/L		106	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551914/4
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 09:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/15/22 09:20*	*1*

Lab Sample ID: LCS 240-551914/3
Matrix: Water
Analysis Batch: 551914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

GC/MS VOA

Analysis Batch: 551914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176081-2	MW-81_110722	Total/NA	Water	8260D SIM	
240-176081-3	MW-81S_110722	Total/NA	Water	8260D SIM	
240-176081-4	MW-106S_110722	Total/NA	Water	8260D SIM	
240-176081-5	MW-107S_110722	Total/NA	Water	8260D SIM	
MB 240-551914/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551914/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 552229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176081-1	TRIP BLANK_88	Total/NA	Water	8260D	
240-176081-2	MW-81_110722	Total/NA	Water	8260D	
240-176081-3	MW-81S_110722	Total/NA	Water	8260D	
240-176081-4	MW-106S_110722	Total/NA	Water	8260D	
MB 240-552229/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552229/5	Lab Control Sample	Total/NA	Water	8260D	
240-176069-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176069-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 552230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176081-5	MW-107S_110722	Total/NA	Water	8260D	
MB 240-552230/7	Method Blank	Total/NA	Water	8260D	
LCS 240-552230/4	Lab Control Sample	Total/NA	Water	8260D	
240-176087-B-21 MS	Matrix Spike	Total/NA	Water	8260D	
240-176087-B-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Client Sample ID: TRIP BLANK_88
Lab Sample ID: 240-176081-1
Date Collected: 11/07/22 00:00
Matrix: Water
Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 16:21

Client Sample ID: MW-81_110722
Lab Sample ID: 240-176081-2
Date Collected: 11/07/22 09:31
Matrix: Water
Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 20:21
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 18:04

Client Sample ID: MW-81S_110722
Lab Sample ID: 240-176081-3
Date Collected: 11/07/22 10:22
Matrix: Water
Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 20:45
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 18:28

Client Sample ID: MW-106S_110722
Lab Sample ID: 240-176081-4
Date Collected: 11/07/22 15:10
Matrix: Water
Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552229	SAM	EET CAN	11/16/22 21:09
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 18:53

Client Sample ID: MW-107S_110722
Lab Sample ID: 240-176081-5
Date Collected: 11/07/22 16:42
Matrix: Water
Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552230	SAM	EET CAN	11/16/22 15:56
Total/NA	Analysis	8260D SIM		1	551914	CS	EET CAN	11/15/22 19:17

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176081-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	DW NPDES RCRA Other			
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	For lab use only
Phone: 248-994-2240	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	Walk-in client
Project Name: Ford LTP Off-Site	Sampler Name: Lehnia Ferreira	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Lab sampling
Project Number: 30146655.402.04	Method of Shipment/Carrier:			Job/SDG No:
PO # 30146655.402.04	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_88	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-81_110722	11/07/22	09:31		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-81S_110722	11/07/22	10:22		3						3					N	G	X	X	X	X	X	X	X	ONLY 3 VOAS COLLECTED
MW-106S_110722	11/07/22	15:10		6						6					N	G	X	X	X	X	X	X	X	
MW-107S_110722	11/07/22	16:42		6						6					N	G	X	X	X	X	X	X	X	

240-176081 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: STARK AND CAPITOL ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehnia Ferreira	Arcadis	11/07/22 17:40	Cold Storage	Arcadis	11/07/22 17:40
	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/8/22 0915		EETA	11/8/22 0915
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11-8-22 943		EETPC	11-9-22 945

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176081
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11.9.22 Opened on 11.9.22

Cooler unpacked by: Danny Rogers

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp.____°C Corrected Cooler Temp.____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp.____°C Corrected Cooler Temp.____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286777
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176081

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.5	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.4	0.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/22/2022 7:59:52 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 22, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176081-1
Sample date: 2022-11-07
Report received by CADENA: 2022-11-22
Initial Data Verification completed by CADENA: 2022-11-22
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176081-1

	Sample Name:	TRIP BLANK_88				MW-81_110722				MW-81S_110722				MW-106S_110722				MW-107S_110722			
	Lab Sample ID:	2401760811				2401760812				2401760813				2401760814				2401760815			
	Sample Date:	11/7/2022				11/7/2022				11/7/2022				11/7/2022				11/7/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

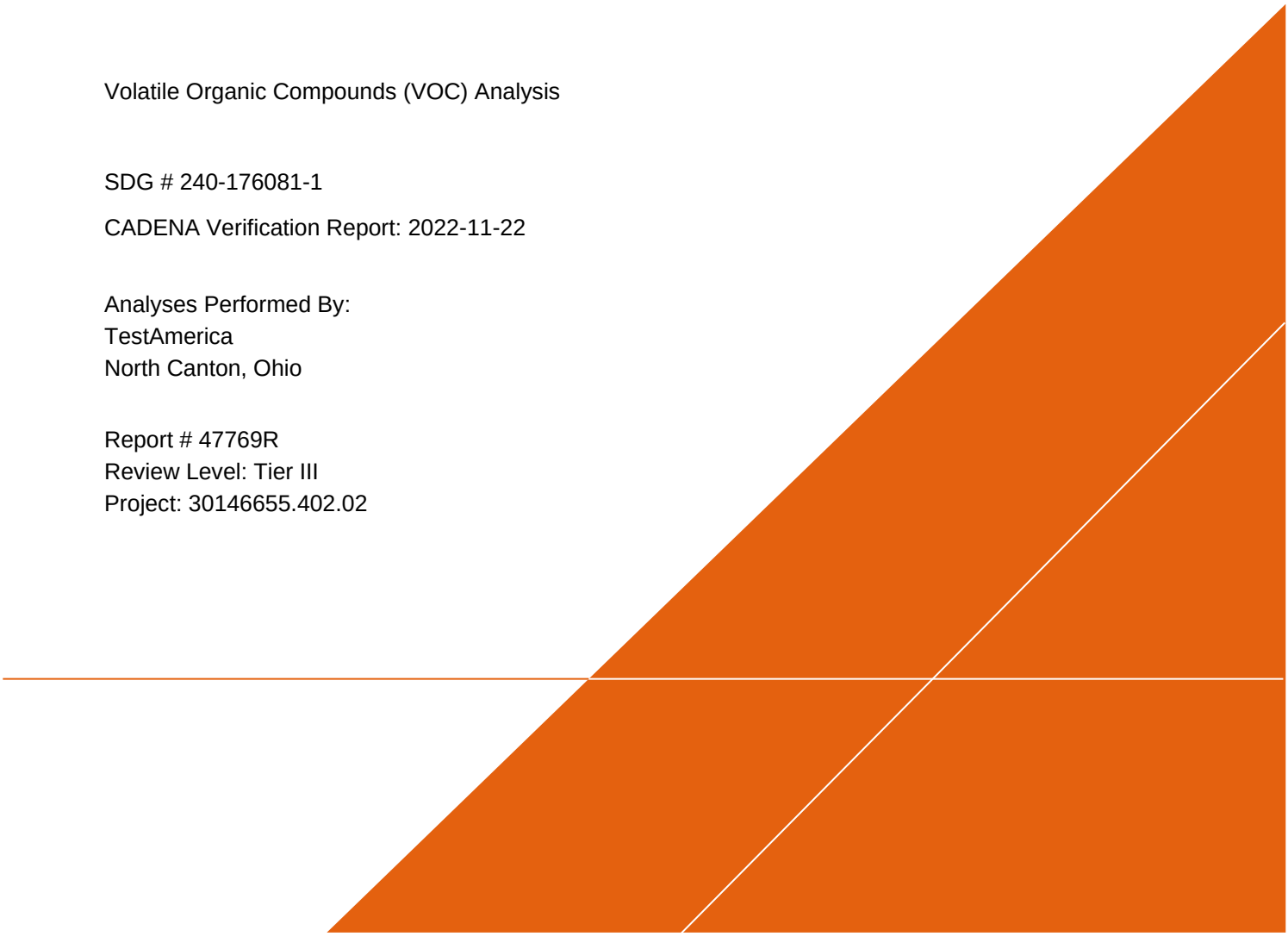
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176081-1

CADENA Verification Report: 2022-11-22

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47769R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176081-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_88	240-176081-1	Water	11/07/22		X	
MW-81_110722	240-176081-2	Water	11/07/22		X	X
MW-81S_110722	240-176081-3	Water	11/07/22		X	X
MW-106S_110722	240-176081-4	Water	11/07/22		X	X
MW-107S_110722	240-176081-5	Water	11/07/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 05, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 06, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Lehria Ferreira	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_88	11/7/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-81_110722	11/07/22	09:31		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-81S_110722	11/07/22	10:22		3						3					N	G	X	X	X	X	X	X	X	ONLY 3 VOAS COLLECTED
MW-106S_110722	11/07/22	15:10		6						6					N	G	X	X	X	X	X	X	X	
MW-107S_110722	11/07/22	16:42		6						6					N	G	X	X	X	X	X	X	X	

240-176081 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For Months

Special Instructions/QC Requirements & Comments:

Sample Address: STARK AND CAPITOL ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehria Ferreira	Arcadis	11/07/22 17:40	Cold Storage	Arcadis	11/07/22 17:40
	ARCADIS	11/8/22 0915		EETA	11/8/22 0915
	EETA	11-8-22 943	Received in Laboratory by:	EETPC	11-9-22 945

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Client Sample ID: TRIP BLANK_88

Lab Sample ID: 240-176081-1

Date Collected: 11/07/22 00:00
Date Received: 11/09/22 09:45

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 16:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 16:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 16:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 16:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/16/22 16:21*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/16/22 16:21*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 16:21*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/16/22 16:21*	*1*

Client Sample ID: MW-81_110722

Lab Sample ID: 240-176081-2

Date Collected: 11/07/22 09:31
Date Received: 11/09/22 09:45

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*		*11/15/22 18:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 20:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 20:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 20:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/16/22 20:21*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*11/16/22 20:21*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 20:21*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/16/22 20:21*	*1*

Client Sample ID: MW-81S_110722

Lab Sample ID: 240-176081-3

Date Collected: 11/07/22 10:22
Date Received: 11/09/22 09:45

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/15/22 18:28*	*1*

Client Sample ID: MW-81S_110722

Lab Sample ID: 240-176081-3

Date Collected: 11/07/22 10:22

Matrix: Water

Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 20:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 20:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 20:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 20:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 20:45*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/16/22 20:45*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/16/22 20:45*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 20:45*	*1*

Client Sample ID: MW-106S_110722

Lab Sample ID: 240-176081-4

Date Collected: 11/07/22 15:10

Matrix: Water

Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 18:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/15/22 18:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 21:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 21:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 21:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 21:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 21:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/16/22 21:09*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/16/22 21:09*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/16/22 21:09*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/16/22 21:09*	*1*

Client Sample ID: MW-107S_110722

Lab Sample ID: 240-176081-5

Date Collected: 11/07/22 16:42

Matrix: Water

Date Received: 11/09/22 09:45

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 19:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/15/22 19:17*	*1*

Client Sample ID: MW-107S_110722
Lab Sample ID: 240-176081-5

Date Collected: 11/07/22 16:42
Matrix: Water
Date Received: 11/09/22 09:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/16/22 15:56*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/16/22 15:56*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/16/22 15:56*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/16/22 15:56*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/23/2022 4:12:08 PM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176033-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

myEOL

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176033-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176033-1

Receipt
The samples were received on 11/8/2022 10:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.0°C

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-552054 recovered above the upper control limit for 1,1-Dichloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_15 (240-176033-1), MW-98S_110422 (240-176033-2), MW-98S-MS_110422 (240-176033-2[MS]), MW-98S-MSD_110422 (240-176033-2[MSD]), (CCV 240-552054/4), (CCVIS 240-552054/3), (LCS 240-552054/5), (LCS 240-552054/6) and (MB 240-552054/8).

Method 8260D: Method required MS/MSD and/or duplicate QC were prepared and analyzed at required batch frequency for analytical batch 240-553086 using samples from other sites, and are not reported with this project.

Method 8260D_SIM: The MSD for analytical batch 240-551906 was analyzed outside the 12-hour tune time window due to an instrument fault. Since this is a batch QC sample, results are reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176033-1	TRIP BLANK_15	Water	11/04/22 00:00	11/08/22 10:50
240-176033-2	MW-98S_110422	Water	11/04/22 13:10	11/08/22 10:50
240-176033-3	MW-77_110422	Water	11/04/22 14:44	11/08/22 10:50
240-176033-4	MW-77S_110422	Water	11/04/22 16:04	11/08/22 10:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Client Sample ID: TRIP BLANK_15 — Lab Sample ID: 240-176033-1

No Detections.

Client Sample ID: MW-98S_110422 — Lab Sample ID: 240-176033-2

No Detections.

Client Sample ID: MW-77_110422 — Lab Sample ID: 240-176033-3

No Detections.

Client Sample ID: MW-77S_110422 — Lab Sample ID: 240-176033-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Client Sample ID: TRIP BLANK_15
Date Collected: 11/04/22 00:00
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/15/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/15/22 15:53*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 15:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/15/22 15:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Client Sample ID: MW-98S_110422
Date Collected: 11/04/22 13:10
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 04:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/15/22 04:58*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 21:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 21:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 21:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/15/22 21:21*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/15/22 21:21*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/15/22 21:21*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/15/22 21:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Client Sample ID: MW-77_110422
Date Collected: 11/04/22 14:44
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 13:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/16/22 13:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Client Sample ID: MW-77S_110422
Date Collected: 11/04/22 16:04
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/16/22 18:34*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/17/22 16:26*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/17/22 16:26*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 16:26*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/17/22 16:26*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176033-1	TRIP BLANK_15	100	79	93	97
240-176033-2	MW-98S_110422	105	78	92	99
240-176033-2 MS	MW-98S-MS_110422	92	99	98	94
240-176033-2 MSD	MW-98S-MSD_110422	90	97	96	92
240-176033-4	MW-77S_110422	97	95	101	104
240-176033-4 MS	MW-77S-MS_110422	81	90	97	87
240-176033-4 MSD	MW-77S-MSD_110422	84	93	97	89
LCS 240-552054/5	Lab Control Sample	90	94	97	93
LCS 240-552439/11	Lab Control Sample	89	100	106	95
MB 240-552054/8	Method Blank	101	81	96	95
MB 240-552439/8	Method Blank	99	98	103	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176033-2	MW-98S_110422	109
240-176033-2 MS	MW-98S-MS_110422	113
240-176033-2 MSD	MW-98S-MSD_110422	113
240-176033-3	MW-77_110422	80
240-176033-4	MW-77S_110422	79
240-176033-4 MS	MW-77S-MS_110422	77
240-176033-4 MSD	MW-77S-MSD_110422	82
500-224931-D-8 MS	Matrix Spike	79
500-224931-D-8 MSD	Matrix Spike Duplicate	79
LCS 240-551906/3	Lab Control Sample	105
LCS 240-552118/3	Lab Control Sample	81
MB 240-551906/4	Method Blank	120
MB 240-552118/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552054/8
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/15/22 15:02*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/15/22 15:02*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/15/22 15:02*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/15/22 15:02*	*1*

Lab Sample ID: LCS 240-552054/5
Matrix: Water
Analysis Batch: 552054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.0		ug/L		108	63 - 134
cis-1,2-Dichloroethene	25.0	26.5		ug/L		106	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.3		ug/L		105	75 - 124
Trichloroethene	25.0	24.6		ug/L		98	70 - 122
Vinyl chloride	12.5	10.4		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176033-2 MS
Matrix: Water
Analysis Batch: 552054

Client Sample ID: MW-98S-MS_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.8		ug/L		111	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	25.0	24.9		ug/L		100	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	25.0		ug/L		100	56 - 136
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176033-2 MS
Matrix: Water
Analysis Batch: 552054

Client Sample ID: MW-98S-MS_110422
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176033-2 MSD
Matrix: Water
Analysis Batch: 552054

Client Sample ID: MW-98S-MSD_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.9		ug/L		112	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 136	4	15
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124	2	15
Vinyl chloride	1.0	U	12.5	9.93		ug/L		79	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: MB 240-552439/8
Matrix: Water
Analysis Batch: 552439

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 12:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 12:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 12:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 12:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 12:50*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*11/17/22 12:50*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/17/22 12:50*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*11/17/22 12:50*	*1*

Lab Sample ID: LCS 240-552439/11
Matrix: Water
Analysis Batch: 552439

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.3		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	25.8		ug/L		103	77 - 123
Tetrachloroethene	25.0	28.6		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	24.4		ug/L		98	75 - 124
Trichloroethene	25.0	25.1		ug/L		100	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-552439/11
Matrix: Water
Analysis Batch: 552439

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	25.2		ug/L		101	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176033-4 MS
Matrix: Water
Analysis Batch: 552439

Client Sample ID: MW-77S-MS_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	24.0		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	66 - 128		
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	56 - 136		
Trichloroethene	1.0	U	25.0	23.2		ug/L		93	61 - 124		
Vinyl chloride	1.0	U	25.0	24.2		ug/L		97	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Lab Sample ID: 240-176033-4 MSD
Matrix: Water
Analysis Batch: 552439

Client Sample ID: MW-77S-MSD_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		95	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	3	15
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124	6	15
Vinyl chloride	1.0	U	25.0	23.9		ug/L		96	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551906/4
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/14/22 18:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*66 - 120*		*11/14/22 18:27*	*1*

Lab Sample ID: LCS 240-551906/3
Matrix: Water
Analysis Batch: 551906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.69		ug/L		97	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-176033-2 MS
Matrix: Water
Analysis Batch: 551906

Client Sample ID: MW-98S-MS_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

Lab Sample ID: 240-176033-2 MSD
Matrix: Water
Analysis Batch: 551906

Client Sample ID: MW-98S-MSD_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

Lab Sample ID: MB 240-552118/4
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 11:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/16/22 11:14*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-552118/3
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.22		ug/L		92	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-176033-4 MS
Matrix: Water
Analysis Batch: 552118

Client Sample ID: MW-77S-MS_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: 240-176033-4 MSD
Matrix: Water
Analysis Batch: 552118

Client Sample ID: MW-77S-MSD_110422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 500-224931-D-8 MS
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	370		30.0	449	4	ug/L		257	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 500-224931-D-8 MSD
Matrix: Water
Analysis Batch: 552118

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	370		30.0	402	4	ug/L		102	51 - 153	11	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

GC/MS VOA

Analysis Batch: 551906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176033-2	MW-98S_110422	Total/NA	Water	8260D SIM	
MB 240-551906/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551906/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176033-2 MS	MW-98S-MS_110422	Total/NA	Water	8260D SIM	
240-176033-2 MSD	MW-98S-MSD_110422	Total/NA	Water	8260D SIM	

Analysis Batch: 552054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176033-1	TRIP BLANK_15	Total/NA	Water	8260D	
240-176033-2	MW-98S_110422	Total/NA	Water	8260D	
MB 240-552054/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552054/5	Lab Control Sample	Total/NA	Water	8260D	
240-176033-2 MS	MW-98S-MS_110422	Total/NA	Water	8260D	
240-176033-2 MSD	MW-98S-MSD_110422	Total/NA	Water	8260D	

Analysis Batch: 552118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176033-3	MW-77_110422	Total/NA	Water	8260D SIM	
240-176033-4	MW-77S_110422	Total/NA	Water	8260D SIM	
MB 240-552118/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552118/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176033-4 MS	MW-77S-MS_110422	Total/NA	Water	8260D SIM	
240-176033-4 MSD	MW-77S-MSD_110422	Total/NA	Water	8260D SIM	
500-224931-D-8 MS	Matrix Spike	Total/NA	Water	8260D SIM	
500-224931-D-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176033-4	MW-77S_110422	Total/NA	Water	8260D	
MB 240-552439/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552439/11	Lab Control Sample	Total/NA	Water	8260D	
240-176033-4 MS	MW-77S-MS_110422	Total/NA	Water	8260D	
240-176033-4 MSD	MW-77S-MSD_110422	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Client Sample ID: TRIP BLANK_15
Date Collected: 11/04/22 00:00
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 15:53

Client Sample ID: MW-98S_110422
Date Collected: 11/04/22 13:10
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552054	SAM	EET CAN	11/15/22 21:21
Total/NA	Analysis	8260D SIM		1	551906	CS	EET CAN	11/15/22 04:58

Client Sample ID: MW-77_110422
Date Collected: 11/04/22 14:44
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D SIM		1	552118	CS	EET CAN	11/16/22 13:46

Client Sample ID: MW-77S_110422
Date Collected: 11/04/22 16:04
Date Received: 11/08/22 10:50

Lab Sample ID: 240-176033-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552439	SAM	EET CAN	11/17/22 16:26
Total/NA	Analysis	8260D SIM		1	552118	CS	EET CAN	11/16/22 18:34

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176033-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Samantha Szpacienler	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C/Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_15	11/4/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
~~MW-98S~~																								3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-98S_110422	11/4/22	13:10		6						6					N	G	X	X	X	X	X	X	X	(SS)
MW-77_110422	11/4/22	14:44		6						6					N	G	X	X	X	X	X	X	X	
MW-77S_110422	11/4/22	16:04		6						6					N	G	X	X	X	X	X	X	X	(SS)
MW-98S-MS_110422	11/4/22	13:10		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-98S-MSD_110422	11/4/22	13:10 (SS)		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-77S-MS_110422	11/4/22	16:04 (SS)		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-77S-MSD_110422	11/4/22	16:04 (SS)		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: BOSTON POST AND BREWSTER ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/4/22 16:55	NONI cool storage	Arcadis	11/4/22 16:55
	ARCADIS	11/7/22 1000		EEA	11/7/22 1000
	EEA	11/7/22 1002		ESNC	11-8-22 10:50

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240-176033 Chain of Custody

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176033
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-8-22 Opened on 11-8-22

Cooler unpacked by: Mandaly

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 6874 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.0 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WT-NC-099

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/23/2022 4:12:08 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 23, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176033-1
Sample date: 2022-11-04
Report received by CADENA: 2022-11-23
Initial Data Verification completed by CADENA: 2022-11-23
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV STANDARD response outliers and MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176033-1

		Sample Name:	TRIP BLANK_15				MW-98S_110422				MW-77_110422				MW-77S_110422			
		Lab Sample ID:	2401760331				2401760332				2401760333				2401760334			
		Sample Date:	11/4/2022				11/4/2022				11/4/2022				11/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---					ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---					ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---					ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---					ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---					ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---					ND	1.0	ug/l	---
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

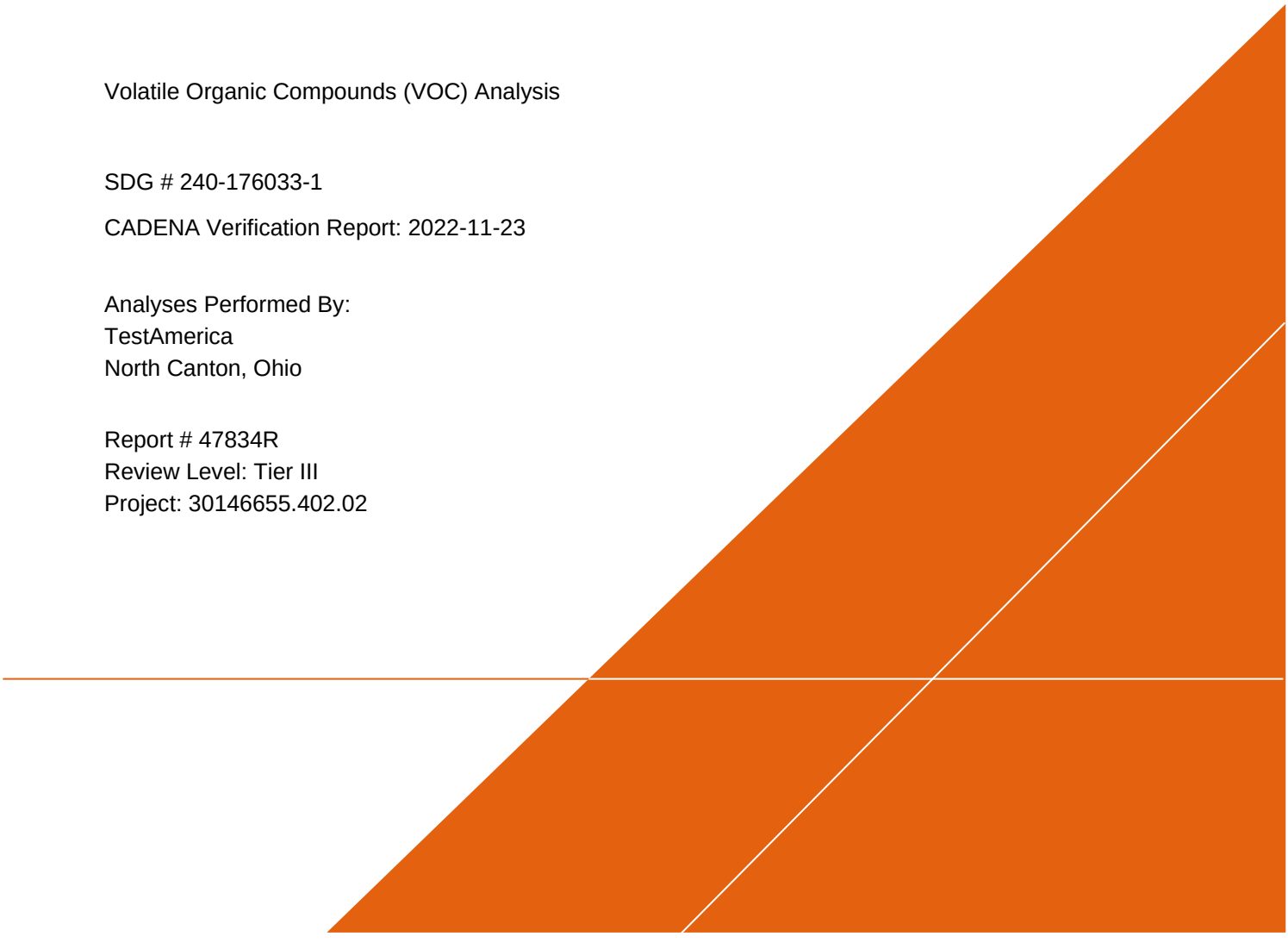
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176033-1

CADENA Verification Report: 2022-11-23

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47834R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176033-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_15	240-176033-1	Water	11/04/22		X	
MW-98S_110422	240-176033-2	Water	11/04/22		X	X
MW-77_110422	240-176033-3	Water	11/04/22		X	X
MW-77S_110422	240-176033-4	Water	11/04/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_15 MW-98S_110422	Continuous Calibration Verification %D	1,1-Dichloroethene	+20.4%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 06, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Samantha Szpaichler	TAT if different from below: 10 day; 3 weeks, ✓ 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_15	11/4/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
~~MW-98S~~																								3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-98S_110422	11/4/22	13:10		6						6					N	G	X	X	X	X	X	X	X	11 (SS)
MW-77_110422	11/4/22	14:44		6						6					N	G	X	X	X	X	X	X	X	
MW-77S_110422	11/4/22	16:04		6						6					N	G	X	X	X	X	X	X	X	(SS)
MW-98S-MS_110422	11/4/22	13:10		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-98S-MSD_110422	11/4/22	13:10 (SS)		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-77S-MS_110422	11/4/22	~~16:04~~ 16:04 (SS)		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-77S-MSD_110422	11/4/22	~~16:04~~ 16:04 (SS)		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: BOSTON POST AND BREWSTER ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	11/4/22 16:55	NOVI cool storage	Arcadis	11/4/22 16:55
[signature]	ARCADIS	11/7/22 1000	[signature]	EEA	11/7/22 1000
[signature]	EEA	11/7/22 1002	Received in Laboratory by: [signature]	TAMC	11-8-22 10:50

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240-176033 Chain of Custody

Client Sample ID: TRIP BLANK_15

Lab Sample ID: 240-176033-1

Date Collected: 11/04/22 00:00
Date Received: 11/08/22 10:50

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 15:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/15/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/15/22 15:53*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/15/22 15:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/15/22 15:53*	*1*

Client Sample ID: MW-98S_110422

Lab Sample ID: 240-176033-2

Date Collected: 11/04/22 13:10
Date Received: 11/08/22 10:50

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/15/22 04:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*		*11/15/22 04:58*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/15/22 21:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/15/22 21:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/15/22 21:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/15/22 21:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/15/22 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/15/22 21:21*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/15/22 21:21*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/15/22 21:21*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/15/22 21:21*	*1*

Client Sample ID: MW-77_110422

Lab Sample ID: 240-176033-3

Date Collected: 11/04/22 14:44
Date Received: 11/08/22 10:50

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 13:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/16/22 13:46*	*1*

Client Sample ID: MW-77S_110422
Lab Sample ID: 240-176033-4

Date Collected: 11/04/22 16:04
Matrix: Water
Date Received: 11/08/22 10:50

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/16/22 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/16/22 18:34*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/17/22 16:26*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/17/22 16:26*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 16:26*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*11/17/22 16:26*	*1*

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:37:54 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176475-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176475-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176475-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following samples was outside the upper control limit: MW-228_111122 (240-176475-4), MW-78_111122 (240-176475-5) and MW-78S_111122 (240-176475-6). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176475-1	TRIP BLANK_05	Water	11/11/22 00:00	11/15/22 10:00
240-176475-2	MW-230D_111122	Water	11/11/22 10:15	11/15/22 10:00
240-176475-3	MW-230_111122	Water	11/11/22 11:15	11/15/22 10:00
240-176475-4	MW-228_111122	Water	11/11/22 12:30	11/15/22 10:00
240-176475-5	MW-78_111122	Water	11/11/22 14:15	11/15/22 10:00
240-176475-6	MW-78S_111122	Water	11/11/22 15:20	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: TRIP BLANK_05 — Lab Sample ID: 240-176475-1

No Detections.

Client Sample ID: MW-230D_111122 — Lab Sample ID: 240-176475-2

No Detections.

Client Sample ID: MW-230_111122 — Lab Sample ID: 240-176475-3

No Detections.

Client Sample ID: MW-228_111122 — Lab Sample ID: 240-176475-4

No Detections.

Client Sample ID: MW-78_111122 — Lab Sample ID: 240-176475-5

No Detections.

Client Sample ID: MW-78S_111122 — Lab Sample ID: 240-176475-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: TRIP BLANK_05

Date Collected: 11/11/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176475-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 14:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 14:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 14:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 14:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/18/22 14:37*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 14:37*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/18/22 14:37*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 14:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: MW-230D_111122
Date Collected: 11/11/22 10:15
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176475-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 22:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/17/22 22:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 18:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 18:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 18:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 18:48*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 18:48*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 18:48*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 18:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: MW-230_111122
Date Collected: 11/11/22 11:15
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176475-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 22:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/17/22 22:46*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 19:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 19:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 19:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/18/22 19:13*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 19:13*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/18/22 19:13*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/18/22 19:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: MW-228_111122
Date Collected: 11/11/22 12:30
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176475-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*	*S1+*	*66 - 120*		*11/17/22 23:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 19:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 19:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 19:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/18/22 19:38*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 19:38*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/18/22 19:38*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/18/22 19:38*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: MW-78_111122
Date Collected: 11/11/22 14:15
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176475-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*125*	*S1+*	*66 - 120*		*11/18/22 00:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 20:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 20:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 20:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/18/22 20:03*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 20:03*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 20:03*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 20:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: MW-78S_111122
Date Collected: 11/11/22 15:20
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176475-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 00:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*125*	*S1+*	*66 - 120*		*11/18/22 00:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 20:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 20:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 20:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/18/22 20:28*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 20:28*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 20:28*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/18/22 20:28*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176475-1	TRIP BLANK_05	100	73	90	94
240-176475-2	MW-230D_111122	102	73	92	94
240-176475-3	MW-230_111122	101	75	95	93
240-176475-4	MW-228_111122	105	74	94	97
240-176475-4 MS	MW-228-MS_111122	86	95	98	87
240-176475-4 MSD	MW-228-MSD_111122	86	96	97	84
240-176475-5	MW-78_111122	105	75	93	95
240-176475-6	MW-78S_111122	103	73	91	93
LCS 240-552675/5	Lab Control Sample	86	93	97	86
MB 240-552675/8	Method Blank	96	74	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176475-2	MW-230D_111122	118
240-176475-3	MW-230_111122	117
240-176475-4	MW-228_111122	122 S1+
240-176475-4 MS	MW-228-MS_111122	119
240-176475-4 MSD	MW-228-MSD_111122	123 S1+
240-176475-5	MW-78_111122	125 S1+
240-176475-6	MW-78S_111122	125 S1+
LCS 240-552553/4	Lab Control Sample	124 S1+
MB 240-552553/5	Method Blank	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552675/8
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 12:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 12:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 12:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/18/22 12:32*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 12:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 12:32*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/18/22 12:32*	*1*

Lab Sample ID: LCS 240-552675/5
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.9		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	24.3		ug/L		97	77 - 123
Tetrachloroethene	25.0	24.0		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	24.1		ug/L		97	75 - 124
Trichloroethene	25.0	21.9		ug/L		88	70 - 122
Vinyl chloride	12.5	12.9		ug/L		103	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-176475-4 MS
Matrix: Water
Analysis Batch: 552675

Client Sample ID: MW-228-MS_111122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	18.9		ug/L		76	61 - 124
Vinyl chloride	1.0	U	25.0	23.3		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176475-4 MS
Matrix: Water
Analysis Batch: 552675

Client Sample ID: MW-228-MS_111122
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Lab Sample ID: 240-176475-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: MW-228-MSD_111122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	20.0		ug/L		80	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	3	15
Trichloroethene	1.0	U	25.0	18.0		ug/L		72	61 - 124	5	15
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552553/5
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/17/22 19:08*	*1*

Lab Sample ID: LCS 240-552553/4
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.20		ug/L		92	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*124*	*S1+*	*66 - 120*

Lab Sample ID: 240-176475-4 MS
Matrix: Water
Analysis Batch: 552553

Client Sample ID: MW-228-MS_111122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.04		ug/L		90	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-176475-4 MSD
Matrix: Water
Analysis Batch: 552553

Client Sample ID: MW-228-MSD_111122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.56		ug/L		96	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*123*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

GC/MS VOA

Analysis Batch: 552553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176475-2	MW-230D_111122	Total/NA	Water	8260D SIM	
240-176475-3	MW-230_111122	Total/NA	Water	8260D SIM	
240-176475-4	MW-228_111122	Total/NA	Water	8260D SIM	
240-176475-5	MW-78_111122	Total/NA	Water	8260D SIM	
240-176475-6	MW-78S_111122	Total/NA	Water	8260D SIM	
MB 240-552553/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552553/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176475-4 MS	MW-228-MS_111122	Total/NA	Water	8260D SIM	
240-176475-4 MSD	MW-228-MSD_111122	Total/NA	Water	8260D SIM	

Analysis Batch: 552675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176475-1	TRIP BLANK_05	Total/NA	Water	8260D	
240-176475-2	MW-230D_111122	Total/NA	Water	8260D	
240-176475-3	MW-230_111122	Total/NA	Water	8260D	
240-176475-4	MW-228_111122	Total/NA	Water	8260D	
240-176475-5	MW-78_111122	Total/NA	Water	8260D	
240-176475-6	MW-78S_111122	Total/NA	Water	8260D	
MB 240-552675/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552675/5	Lab Control Sample	Total/NA	Water	8260D	
240-176475-4 MS	MW-228-MS_111122	Total/NA	Water	8260D	
240-176475-4 MSD	MW-228-MSD_111122	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Client Sample ID: TRIP BLANK_05
Lab Sample ID: 240-176475-1
Date Collected: 11/11/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 14:37

Client Sample ID: MW-230D_111122
Lab Sample ID: 240-176475-2
Date Collected: 11/11/22 10:15
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 18:48
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/17/22 22:22

Client Sample ID: MW-230_111122
Lab Sample ID: 240-176475-3
Date Collected: 11/11/22 11:15
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 19:13
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/17/22 22:46

Client Sample ID: MW-228_111122
Lab Sample ID: 240-176475-4
Date Collected: 11/11/22 12:30
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 19:38
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/17/22 23:11

Client Sample ID: MW-78_111122
Lab Sample ID: 240-176475-5
Date Collected: 11/11/22 14:15
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 20:03
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 00:23

Client Sample ID: MW-78S_111122
Lab Sample ID: 240-176475-6
Date Collected: 11/11/22 15:20
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 20:28
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 00:48

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176475-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
a	TRIP BLANK_05		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
b	MW-230D_111122	11/11/22	1015		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
c	MW-230_111122	11/11/22	1115		6						6					N	G	X	X	X	X	X	X	X	
d	MW-228_111122	11/11/22	1230		6						6					N	G	X	X	X	X	X	X	X	
e	MW-228-MS_111122	11/11/22	1230																						CONDUCT MS
f	MW-228-MSD_111122	11/11/22	1230																						CONDUCT MSD
g	MW-78_111122	11/11/22	1415																						
h	MW-78s_111122	11/11/22	1520																						

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer th: ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments: Minton ct. ROW, Laurel ROW, 34591 Beacon ROW

Sample Address:

Submit all results through Cadena at jtomalia@cadenaeo.com. Cadena #E2[illegible]3631

Level IV Reporting requested.

240-176475 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/11/22 1620	Arcadis Cold Storage	Arcadis	11/14/22 0950
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/14/22 0950			11/14/22 0950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/14/22 0950			11-15-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176476
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(N)
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cornell	(Yes)	~~No~~
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176475

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176475-1
Sample date: 2022-11-11
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SIM GCMS VOC LCS, -004MSD, and samples -004, -005, and -006 surrogate recovery outliers did not result in qualification of client sample data.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176475-1

		Sample Name:	TRIP BLANK_05				MW-230D_111122				MW-230_111122				MW-228_111122				MW-78_111122				MW-78S_111122			
		Lab Sample ID:	2401764751				2401764752				2401764753				2401764754				2401764755				2401764756			
		Sample Date:	11/11/2022				11/11/2022				11/11/2022				11/11/2022				11/11/2022				11/11/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																									
OSW-8260D																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

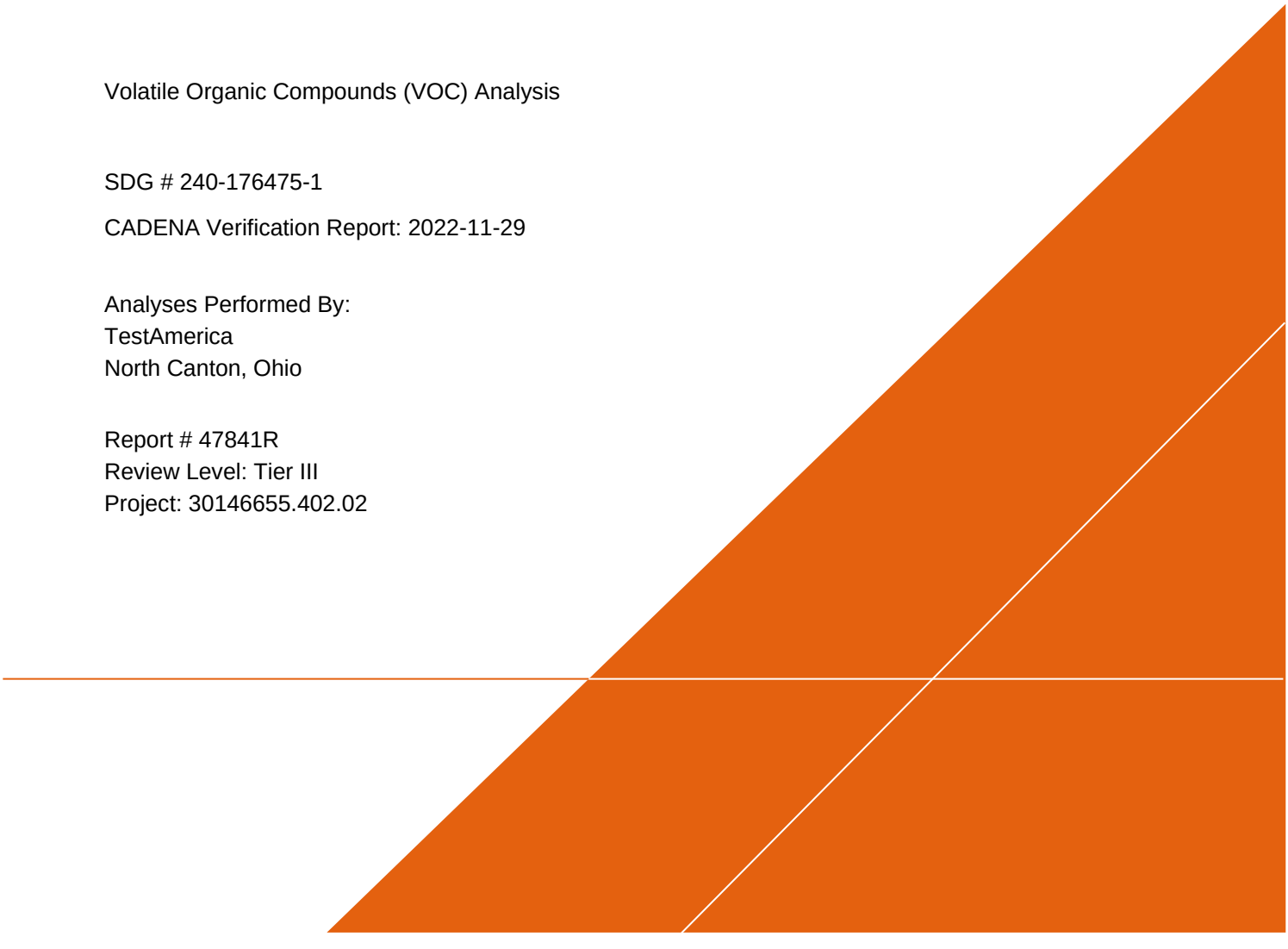
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176475-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47841R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176475-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_05	240-176475-1	Water	11/11/22		X	
MW-230D_111122	240-176475-2	Water	11/11/22		X	X
MW-230_111122	240-176475-3	Water	11/11/22		X	X
MW-228_111122	240-176475-4	Water	11/11/22		X	X
MW-78_111122	240-176475-5	Water	11/11/22		X	X
MW-78S_111122	240-176475-6	Water	11/11/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 07, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 07, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW | NPDES | RCRA | Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Sukaria	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_05		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-230D_111122	11/11/22	1015		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-230_111122	11/11/22	1115		6						6					N	G	X	X	X	X	X	X	X	
MW-228_111122	11/11/22	1230		6						6					N	G	X	X	X	X	X	X	X	
MW-228-MS_111122	11/11/22	1230																						CONDUCT MS
MW-228-MSD_111122	11/11/22	1230																						CONDUCT MSD
MW-78_111122	11/11/22	1415																						
MW-78s_111122	11/11/22	1520																						

Possible Hazard Identification: Non-Hazard | Flammable | Skin Irritant | Poison B | Unknown

Sample Disposal (A fee may be assessed if samples are retained longer th: Return to Client | Disposal By Lab | Archive For

Special Instructions/QC Requirements & Comments:
Sample Address: Minton ct. ROW, Laurel ROW, 34591 Beacon ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E2[illegible]3631
Level IV Reporting requested.

240-176475 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sam Sukaria	Arcadis	11/11/22 1620	Arcadis Cold Storage	Arcadis	11/11/22 1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/14/22 0950			11/14/22 0950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/14/22 0[illegible]			11-15-22 10:00

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Client Sample ID: TRIP BLANK_05
Lab Sample ID: 240-176475-1
Date Collected: 11/11/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 14:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 14:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 14:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 14:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/18/22 14:37*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 14:37*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/18/22 14:37*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 14:37*	*1*

Client Sample ID: MW-230D_111122
Lab Sample ID: 240-176475-2
Date Collected: 11/11/22 10:15
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 22:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/17/22 22:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 18:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 18:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 18:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 18:48*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 18:48*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/18/22 18:48*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 18:48*	*1*

Client Sample ID: MW-230_111122
Lab Sample ID: 240-176475-3
Date Collected: 11/11/22 11:15
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 22:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 120*		*11/17/22 22:46*	*1*

Client Sample ID: MW-230_111122
Lab Sample ID: 240-176475-3
Date Collected: 11/11/22 11:15
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 19:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 19:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 19:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/18/22 19:13*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 19:13*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/18/22 19:13*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/18/22 19:13*	*1*

Client Sample ID: MW-228_111122
Lab Sample ID: 240-176475-4
Date Collected: 11/11/22 12:30
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*	*S1+*	*66 - 120*		*11/17/22 23:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 19:38	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 19:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 19:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 19:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/18/22 19:38*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 19:38*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/18/22 19:38*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/18/22 19:38*	*1*

Client Sample ID: MW-78_111122
Lab Sample ID: 240-176475-5
Date Collected: 11/11/22 14:15
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*125*	*S1+*	*66 - 120*		*11/18/22 00:23*	*1*

Client Sample ID: MW-78_111122
Lab Sample ID: 240-176475-5

Date Collected: 11/11/22 14:15
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 20:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 20:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 20:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/18/22 20:03*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/18/22 20:03*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 20:03*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 20:03*	*1*

Client Sample ID: MW-78S_111122
Lab Sample ID: 240-176475-6

Date Collected: 11/11/22 15:20
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 00:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*125*	*S1+*	*66 - 120*		*11/18/22 00:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 20:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 20:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 20:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 20:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/18/22 20:28*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 20:28*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 20:28*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/18/22 20:28*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:13:04 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176240-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Job ID: 240-176240-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176240-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
Method 8260D: An MS/MSD was done in 240-552226 however it was not acquired by the data system due to an instrument error. The effected sample is TRIP BLANK_103 (240-176240-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176240-1	TRIP BLANK_103	Water	11/08/22 00:00	11/11/22 08:00
240-176240-2	MW-138S_110822	Water	11/08/22 10:37	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Client Sample ID: TRIP BLANK_103 — Lab Sample ID: 240-176240-1

No Detections.

Client Sample ID: MW-138S_110822 — Lab Sample ID: 240-176240-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Client Sample ID: TRIP BLANK_103

Date Collected: 11/08/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176240-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/16/22 15:21*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/16/22 15:21*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/16/22 15:21*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/22 15:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Client Sample ID: MW-138S_110822
Date Collected: 11/08/22 10:37
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176240-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 02:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/21/22 02:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:18	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			11/17/22 15:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/17/22 15:18*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/17/22 15:18*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/17/22 15:18*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 15:18*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176240-1	TRIP BLANK_103	101	79	92	96
240-176240-2	MW-138S_110822	107	74	91	99
240-176249-A-3 MSD	Matrix Spike Duplicate	91	98	97	94
240-176249-D-3 MS	Matrix Spike	97	99	97	95
LCS 240-552226/5	Lab Control Sample	93	96	99	95
LCS 240-552226/6	Lab Control Sample	90	91	94	89
LCS 240-552441/5	Lab Control Sample	93	94	98	94
MB 240-552226/8	Method Blank	100	82	94	96
MB 240-552441/8	Method Blank	104	78	96	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176240-2	MW-138S_110822	77
240-176252-I-2 MS	Matrix Spike	80
240-176252-O-2 MSD	Matrix Spike Duplicate	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552226/8
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 14:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 14:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 14:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 14:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 14:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/16/22 14:05*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*11/16/22 14:05*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/16/22 14:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/22 14:05*	*1*

Lab Sample ID: LCS 240-552226/5
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.7		ug/L		107	77 - 123
Tetrachloroethene	25.0	24.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	12.5	10.2		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: LCS 240-552226/6
Matrix: Water
Analysis Batch: 552226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:37	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-552441/8
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/17/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/17/22 13:37*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/17/22 13:37*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 13:37*	*1*

Lab Sample ID: LCS 240-552441/5
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	26.0		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			25.0	26.0		ug/L		104	77 - 123		
Tetrachloroethene			25.0	25.1		ug/L		101	76 - 123		
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	75 - 124		
Trichloroethene			25.0	24.3		ug/L		97	70 - 122		
Vinyl chloride			12.5	10.8		ug/L		87	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176249-A-3 MSD
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	56 - 135	14	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	19.7		ug/L		79	62 - 131	18	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	9	15
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124	8	15
Vinyl chloride	2.9		12.5	15.4		ug/L		99	43 - 157	8	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176249-D-3 MS
Matrix: Water
Analysis Batch: 552441

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.3		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.5		ug/L		102	66 - 128
Tetrachloroethene	1.0	U	25.0	23.7		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	2.9		12.5	16.6		ug/L		109	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/20/22 22:52*	*1*

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane			10.0	8.84		ug/L		88	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176252-I-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176252-O-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

GC/MS VOA

Analysis Batch: 552226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176240-1	TRIP BLANK_103	Total/NA	Water	8260D	
MB 240-552226/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552226/5	Lab Control Sample	Total/NA	Water	8260D	
LCS 240-552226/6	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 552441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176240-2	MW-138S_110822	Total/NA	Water	8260D	
MB 240-552441/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552441/5	Lab Control Sample	Total/NA	Water	8260D	
240-176249-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176249-D-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176240-2	MW-138S_110822	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176252-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Client Sample ID: TRIP BLANK_103

Lab Sample ID: 240-176240-1

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552226	SAM	EET CAN	11/16/22 15:21

Client Sample ID: MW-138S_110822

Lab Sample ID: 240-176240-2

Date Collected: 11/08/22 10:37

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552441	SAM	EET CAN	11/17/22 15:18
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 02:14

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176240-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Leticia Ferreira	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_103	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-138S_110822	11/08/22	10:37		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176240 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by: Leticia Ferreira	Company: Arcadis	Date/Time: 11/08/22 17:40	Received by: Novi cold storage [redacted] (IC)	Company: Arcadis	Date/Time: 11/08/28 17:40
Relinquished by: [signature]	Company: ARCADIS	Date/Time: 11/10/22 1515	Received by: [signature]	Company: EEN	Date/Time: 11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company: EETMC	Date/Time: 11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176210
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by:

Cooler Received on 11-11-22 Opened on 11-11-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	Yes	No
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⇦ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176240

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176240
Sample date: 2022-11-08
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176240

		Sample Name:	TRIP BLANK_103				MW-138S_110822			
		Lab Sample ID:	2401762401				2401762402			
		Sample Date:	11/8/2022				11/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.5	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

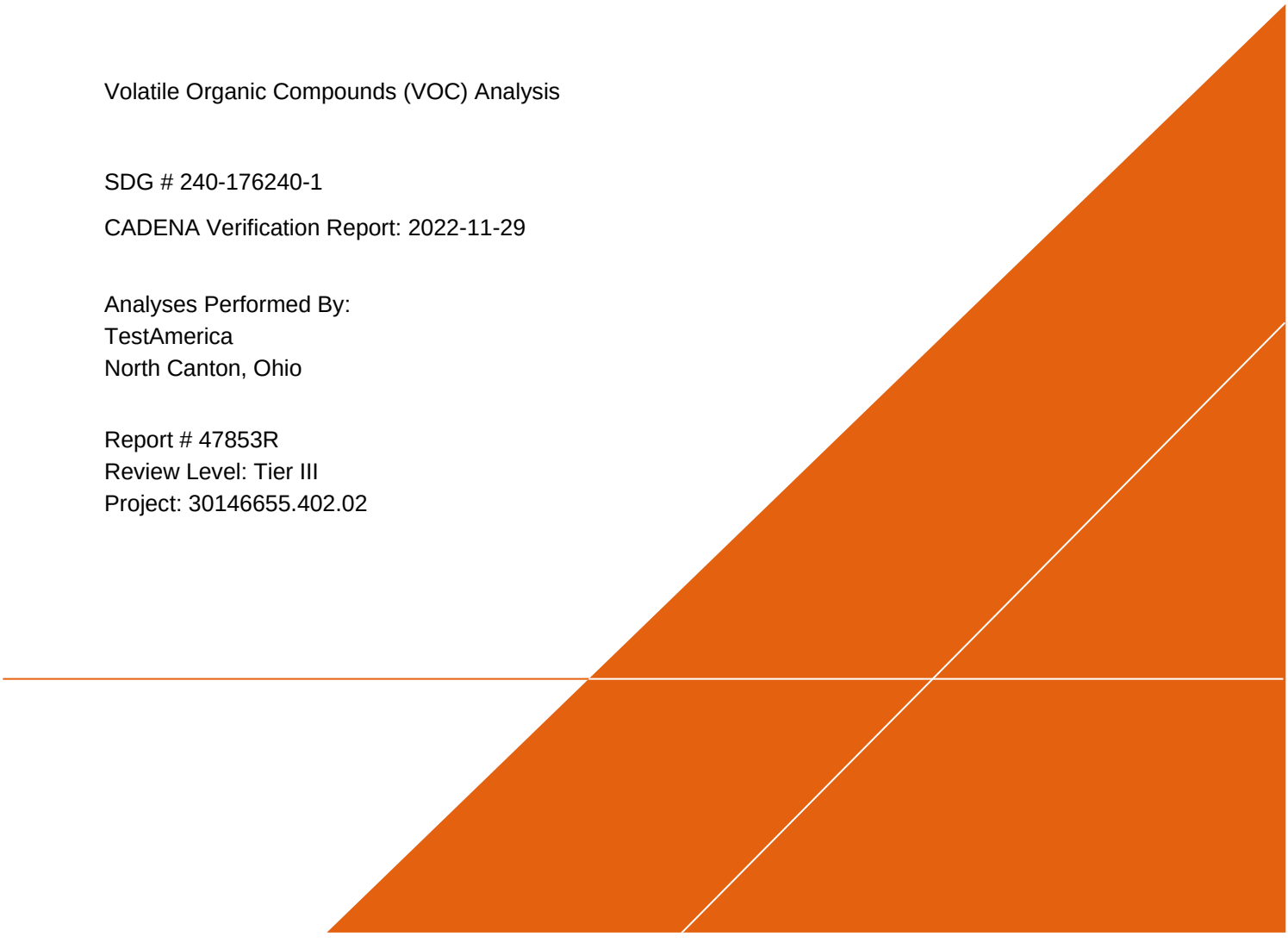
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176240-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47853R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176240-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_103	240-176240-1	Water	11/08/22		X	
MW-138S_110822	240-176240-2	Water	11/08/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Leticia Ferreira	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_103	11/8/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-138S_110822	11/08/22	10:37		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176240 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Beacon Row

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Leticia Ferreira	Arcadis	11/08/22 17:40	Received by: [redacted] Novi cold storage	Arcadis	11/08/28 17:40
Relinquished by: [signature]	ARCADIS	11/10/22 1515	Received by: [signature]	EEN A	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company: EET DC	Date/Time: 11-11-22 800

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Client Sample ID: TRIP BLANK_103
Lab Sample ID: 240-176240-1
Date Collected: 11/08/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/16/22 15:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/16/22 15:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/16/22 15:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/16/22 15:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/16/22 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/16/22 15:21*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/16/22 15:21*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/16/22 15:21*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/16/22 15:21*	*1*

Client Sample ID: MW-138S_110822
Lab Sample ID: 240-176240-2
Date Collected: 11/08/22 10:37
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 02:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/21/22 02:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 15:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 15:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 15:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 15:18	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			11/17/22 15:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/17/22 15:18*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/17/22 15:18*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/17/22 15:18*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/17/22 15:18*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:24:10 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176252-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/29/2022 8:24:10 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Job ID: 240-176252-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176252-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176252-1	TRIP BLANK_126	Water	11/09/22 00:00	11/11/22 08:00
240-176252-2	MW-192S_110922	Water	11/09/22 10:23	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Client Sample ID: TRIP BLANK_126 — Lab Sample ID: 240-176252-1

No Detections.

Client Sample ID: MW-192S_110922 — Lab Sample ID: 240-176252-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Client Sample ID: TRIP BLANK_126
Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176252-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 13:36*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 13:36*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 13:36*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/17/22 13:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Client Sample ID: MW-192S_110922
Date Collected: 11/09/22 10:23
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176252-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 06:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 06:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 16:06*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 16:06*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 16:06*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 16:06*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176252-1	TRIP BLANK_126	99	91	100	92
240-176252-2	MW-192S_110922	100	91	101	91
240-176252-2 MS	MW-192S-MS_110922	98	91	99	93
240-176252-2 MSD	MW-192S-MSD_110922	98	92	98	93
LCS 240-552444/4	Lab Control Sample	96	94	100	96
MB 240-552444/7	Method Blank	99	93	100	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176252-2	MW-192S_110922	80
240-176252-2 MS	MW-192S-MS_110922	80
240-176252-2 MSD	MW-192S-MSD_110922	80
LCS 240-552843/3	Lab Control Sample	78
MB 240-552843/4	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552444/7
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 12:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 12:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 12:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 12:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 12:46*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/22 12:46*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 12:46*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/17/22 12:46*	*1*

Lab Sample ID: LCS 240-552444/4
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.3		ug/L		89	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176252-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: MW-192S-MS_110922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	20.6		ug/L		82	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	21.3		ug/L		85	61 - 124
Vinyl chloride	1.0	U	12.5	13.9		ug/L		111	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176252-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: MW-192S-MS_110922
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: 240-176252-2 MSD
Matrix: Water
Analysis Batch: 552444

Client Sample ID: MW-192S-MSD_110922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	19.8		ug/L		79	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.6		ug/L		83	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	14.4		ug/L		115	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552843/4
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/20/22 22:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	78		66 - 120		11/20/22 22:52	1

Lab Sample ID: LCS 240-552843/3
Matrix: Water
Analysis Batch: 552843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.84		ug/L		88	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		66 - 120

Lab Sample ID: 240-176252-2 MS
Matrix: Water
Analysis Batch: 552843

Client Sample ID: MW-192S-MS_110922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176252-2 MSD
Matrix: Water
Analysis Batch: 552843

Client Sample ID: MW-192S-MSD_110922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.92		ug/L		99	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

GC/MS VOA

Analysis Batch: 552444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176252-1	TRIP BLANK_126	Total/NA	Water	8260D	
240-176252-2	MW-192S_110922	Total/NA	Water	8260D	
MB 240-552444/7	Method Blank	Total/NA	Water	8260D	
LCS 240-552444/4	Lab Control Sample	Total/NA	Water	8260D	
240-176252-2 MS	MW-192S-MS_110922	Total/NA	Water	8260D	
240-176252-2 MSD	MW-192S-MSD_110922	Total/NA	Water	8260D	

Analysis Batch: 552843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176252-2	MW-192S_110922	Total/NA	Water	8260D SIM	
MB 240-552843/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552843/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176252-2 MS	MW-192S-MS_110922	Total/NA	Water	8260D SIM	
240-176252-2 MSD	MW-192S-MSD_110922	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Client Sample ID: TRIP BLANK_126

Lab Sample ID: 240-176252-1

Date Collected: 11/09/22 00:00

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 13:36

Client Sample ID: MW-192S_110922

Lab Sample ID: 240-176252-2

Date Collected: 11/09/22 10:23

Matrix: Water

Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 16:06
Total/NA	Analysis	8260D SIM		1	552843	CS	EET CAN	11/21/22 06:02

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176252-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehnia Ferrem	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_126	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-1925-110922	11/09/22	10:23		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B; 3 VOAs for 8260B SIM
MW-1925-MS_110922	11/09/22	10:23		6						6					N	G	X	X	X	X	X	X	X	
MW-1925-MSD_110922	11/09/22	10:23		6						6					N	G	X	X	X	X	X	X	X	

240-176252 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: ~~Beacon ROW~~ BREWSTER ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehnia Ferrem	Arcadis	11/09/22 15:15	Novi cold Storage	Arcadis	11/09/22 15:15
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 / 1515	Eddy	EETA	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETNC	11-11-22 800

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176252

Eurofins - Canton Sample Receipt Form/Narrative Login # : _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Vanessa Reyes

Cooler Received on 11-11-22 Opened on 11-11-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176252

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176252-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176252-1

		Sample Name:	TRIP BLANK_126				MW-192S_110922			
		Lab Sample ID:	2401762521				2401762522			
		Sample Date:	11/9/2022				11/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

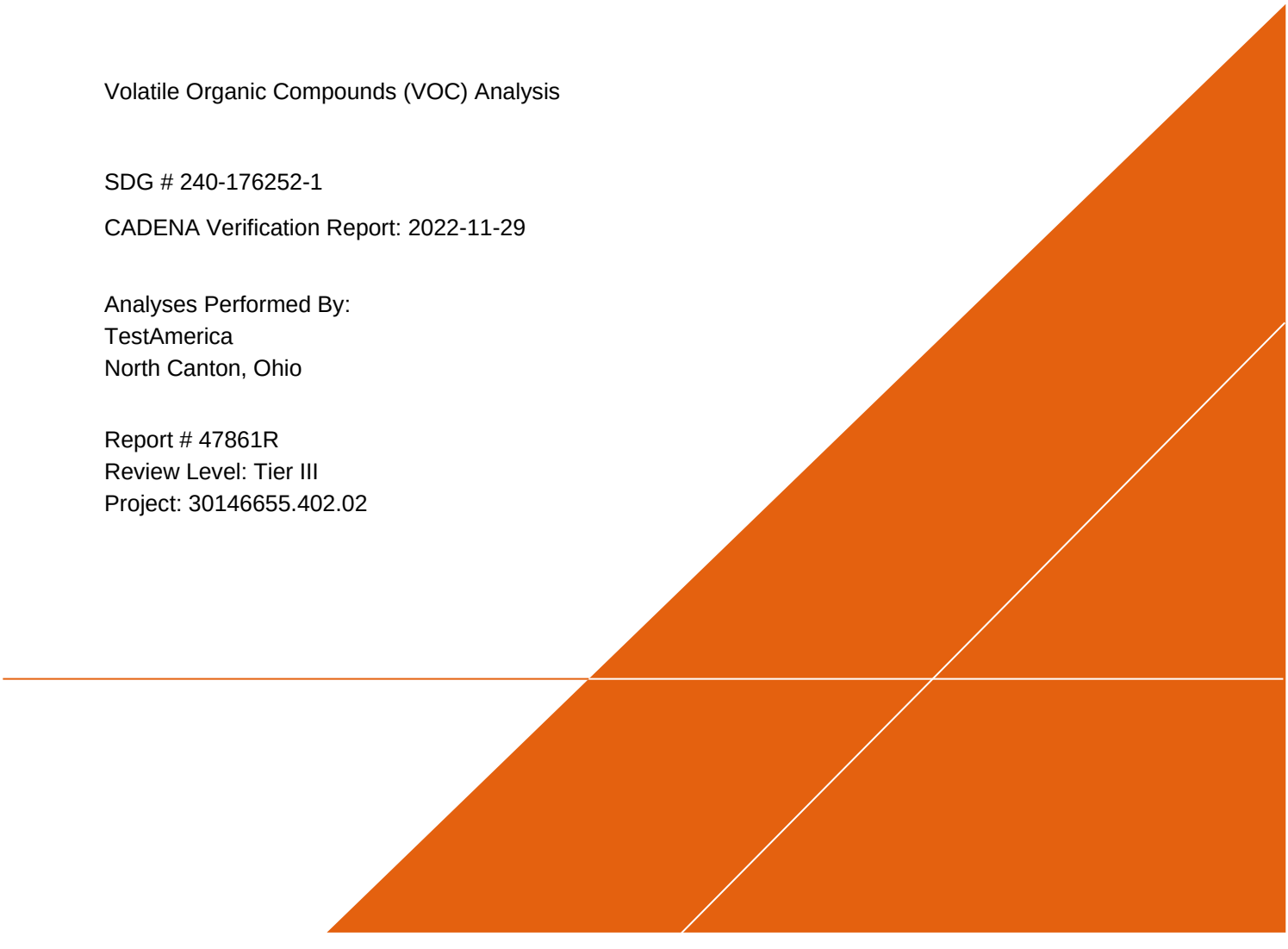
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176252-1

CADENA Verification Report: 2022-11-29

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47861R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176252-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_126	240-176252-1	Water	11/09/22		X	
MW-192S_110922	240-176252-2	Water	11/09/22		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Lehrin Ferrem	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_126	11/9/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-192S_110922	11/09/22	10:23		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-192S-MS_110922	11/09/22	10:23		6						6					N	G	X	X	X	X	X	X	X	
MW-192S-MSD_110922	11/09/22	10:23		6						6					N	G	X	X	X	X	X	X	X	

240-176252 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:
Sample Address: ~~Beacon Row (CF)~~ BREWSTER ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Lehrin Ferrem	Arcadis	11/09/22 15:15	Novi cold Storage	Arcadis	11/09/22 15:15
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 / 1515		EETA	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETMC	11-11-22 800

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Client Sample ID: TRIP BLANK_126
Lab Sample ID: 240-176252-1
Date Collected: 11/09/22 00:00
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 13:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 13:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 13:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 13:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 13:36*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 13:36*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 13:36*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/17/22 13:36*	*1*

Client Sample ID: MW-192S_110922
Lab Sample ID: 240-176252-2
Date Collected: 11/09/22 10:23
Matrix: Water
Date Received: 11/11/22 08:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 06:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 06:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 16:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 16:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 16:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 16:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 16:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 16:06*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 16:06*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 16:06*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 16:06*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176468-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

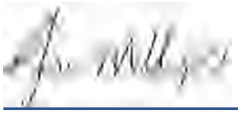
See page two for job notes and contact information.

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176468-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176468-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following samples was outside the upper control limit: MW-79D_111122 (240-176468-5) and DUP-11 (240-176468-6). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176468-1	TRIP BLANK_58	Water	11/11/22 00:00	11/15/22 10:00
240-176468-2	MW-139S_111122	Water	11/11/22 11:11	11/15/22 10:00
240-176468-3	MW-140S_111122	Water	11/11/22 12:26	11/15/22 10:00
240-176468-4	MW-79SR_111122	Water	11/11/22 13:41	11/15/22 10:00
240-176468-5	MW-79D_111122	Water	11/11/22 14:46	11/15/22 10:00
240-176468-6	DUP-11	Water	11/11/22 00:00	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: TRIP BLANK_58 — Lab Sample ID: 240-176468-1

No Detections.

Client Sample ID: MW-139S_111122 — Lab Sample ID: 240-176468-2

No Detections.

Client Sample ID: MW-140S_111122 — Lab Sample ID: 240-176468-3

No Detections.

Client Sample ID: MW-79SR_111122 — Lab Sample ID: 240-176468-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-79D_111122 — Lab Sample ID: 240-176468-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.6		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-11 — Lab Sample ID: 240-176468-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: TRIP BLANK_58

Date Collected: 11/11/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176468-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/18/22 14:12*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 14:12*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 14:12*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 14:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: MW-139S_111122
Date Collected: 11/11/22 11:11
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176468-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/17/22 19:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 16:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 16:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 16:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/18/22 16:42*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/18/22 16:42*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 16:42*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 16:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: MW-140S_111122
Date Collected: 11/11/22 12:26
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176468-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 06:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 06:34*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 17:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 17:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 17:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/18/22 17:07*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 17:07*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 17:07*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 17:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: MW-79SR_111122
Date Collected: 11/11/22 13:41
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176468-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/17/22 21:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 17:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 17:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 17:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:32	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/18/22 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/18/22 17:32*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/18/22 17:32*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/18/22 17:32*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/18/22 17:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: MW-79D_111122

Date Collected: 11/11/22 14:46
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176468-5

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 21:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*	*S1+*	*66 - 120*		*11/17/22 21:33*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 17:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 17:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 17:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:58	1
Vinyl chloride	**2.6**		1.0	0.45	ug/L			11/18/22 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 17:58*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/18/22 17:58*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 17:58*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/18/22 17:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: DUP-11
Date Collected: 11/11/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176468-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 21:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*		*11/17/22 21:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 18:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 18:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 18:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 18:23*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 18:23*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 18:23*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 18:23*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176468-1	TRIP BLANK_58	101	74	91	94
240-176468-2	MW-139S_111122	107	76	93	95
240-176468-3	MW-140S_111122	101	73	91	95
240-176468-4	MW-79SR_111122	104	72	90	96
240-176468-5	MW-79D_111122	102	72	91	93
240-176468-6	DUP-11	102	74	93	95
240-176475-D-4 MSD	Matrix Spike Duplicate	86	96	97	84
240-176475-E-4 MS	Matrix Spike	86	95	98	87
LCS 240-552675/5	Lab Control Sample	86	93	97	86
MB 240-552675/8	Method Blank	96	74	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176368-E-17 MS	Matrix Spike	81
240-176368-E-17 MSD	Matrix Spike Duplicate	77
240-176468-2	MW-139S_111122	107
240-176468-3	MW-140S_111122	79
240-176468-4	MW-79SR_111122	118
240-176468-5	MW-79D_111122	122 S1+
240-176468-6	DUP-11	121 S1+
240-176475-I-4 MS	Matrix Spike	119
240-176475-O-4 MSD	Matrix Spike Duplicate	123 S1+
LCS 240-552553/4	Lab Control Sample	124 S1+
LCS 240-553045/3	Lab Control Sample	81
MB 240-552553/5	Method Blank	116
MB 240-553045/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552675/8
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 12:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 12:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 12:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 12:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/18/22 12:32*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 12:32*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 12:32*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/18/22 12:32*	*1*

Lab Sample ID: LCS 240-552675/5
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.9		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	24.3		ug/L		97	77 - 123
Tetrachloroethene	25.0	24.0		ug/L		96	76 - 123
trans-1,2-Dichloroethene	25.0	24.1		ug/L		97	75 - 124
Trichloroethene	25.0	21.9		ug/L		88	70 - 122
Vinyl chloride	12.5	12.9		ug/L		103	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.4		ug/L		98	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	20.0		ug/L		80	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	3	15
Trichloroethene	1.0	U	25.0	18.0		ug/L		72	61 - 124	5	15
Vinyl chloride	1.0	U	25.0	23.8		ug/L		95	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176475-D-4 MSD
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176475-E-4 MS
Matrix: Water
Analysis Batch: 552675

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.8		ug/L		99	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	18.9		ug/L		76	61 - 124
Vinyl chloride	1.0	U	25.0	23.3		ug/L		93	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552553/5
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:08	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/17/22 19:08*	*1*

Lab Sample ID: LCS 240-552553/4
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.20		ug/L		92	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*124*	*S1+*	*66 - 120*

Lab Sample ID: 240-176475-I-4 MS
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.04		ug/L		90	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	119		66 - 120

Lab Sample ID: 240-176475-O-4 MSD
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.56		ug/L		96	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	123	S1+	66 - 120

Lab Sample ID: MB 240-553045/4
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 22:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		66 - 120		11/21/22 22:31	1

Lab Sample ID: LCS 240-553045/3
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.30		ug/L		93	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

Lab Sample ID: 240-176368-E-17 MS
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	160		10.0	179	4	ug/L		148	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

Lab Sample ID: 240-176368-E-17 MSD
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	160		10.0	172	4	ug/L		70	51 - 153	4	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176368-E-17 MSD
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

GC/MS VOA

Analysis Batch: 552553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176468-2	MW-139S_111122	Total/NA	Water	8260D SIM	
240-176468-4	MW-79SR_111122	Total/NA	Water	8260D SIM	
240-176468-5	MW-79D_111122	Total/NA	Water	8260D SIM	
240-176468-6	DUP-11	Total/NA	Water	8260D SIM	
MB 240-552553/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552553/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176475-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176475-O-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176468-1	TRIP BLANK_58	Total/NA	Water	8260D	
240-176468-2	MW-139S_111122	Total/NA	Water	8260D	
240-176468-3	MW-140S_111122	Total/NA	Water	8260D	
240-176468-4	MW-79SR_111122	Total/NA	Water	8260D	
240-176468-5	MW-79D_111122	Total/NA	Water	8260D	
240-176468-6	DUP-11	Total/NA	Water	8260D	
MB 240-552675/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552675/5	Lab Control Sample	Total/NA	Water	8260D	
240-176475-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-176475-E-4 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 553045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176468-3	MW-140S_111122	Total/NA	Water	8260D SIM	
MB 240-553045/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553045/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176368-E-17 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176368-E-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Client Sample ID: TRIP BLANK_58
Lab Sample ID: 240-176468-1
Date Collected: 11/11/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 14:12

Client Sample ID: MW-139S_111122
Lab Sample ID: 240-176468-2
Date Collected: 11/11/22 11:11
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 16:42
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/17/22 19:56

Client Sample ID: MW-140S_111122
Lab Sample ID: 240-176468-3
Date Collected: 11/11/22 12:26
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 17:07
Total/NA	Analysis	8260D SIM		1	553045	CS	EET CAN	11/22/22 06:34

Client Sample ID: MW-79SR_111122
Lab Sample ID: 240-176468-4
Date Collected: 11/11/22 13:41
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 17:32
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/17/22 21:09

Client Sample ID: MW-79D_111122
Lab Sample ID: 240-176468-5
Date Collected: 11/11/22 14:46
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 17:58
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/17/22 21:33

Client Sample ID: DUP-11
Lab Sample ID: 240-176468-6
Date Collected: 11/11/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552675	SAM	EET CAN	11/18/22 18:23
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/17/22 21:57

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176468-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

2020

Chain of Custody Record

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

MICHIGAN 190

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THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:					
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:		
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs		
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time				
Phone: 248-994-2240	Sampler Name: GARY SCHAFER	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		For lab use only: Walk-in client; Lab sampling; Job/SDG No:		
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:					
Project Number: 30146655.402.04	Shipping/Tracking No:					
PO # 30146655.402.04						

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_58	11/11/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-139S_111222	11/11/22	1111		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-140S_111222	11/11/22	1226		6						6					N	G	X	X	X	X	X	X	X	
MW-79SR_111222	11/11/22	1341		6						6					N	G	X	X	X	X	X	X	X	
MW-79D_111222	11/11/22	1446		6						6					N	G	X	X	X	X	X	X	X	
DUP-11	11/11/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-176468 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if sam: Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: BOSTON POST ROW

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
GARY SCHAFER (CW)	ARCADIS	11/12/22 1530	NOVI COLD STORAGE	ARCADIS	11/12/22 1530
Relinquished by:	Company: ARCADIS	Date/Time: 11/14/22 0950	Received by:	Company: CETR	Date/Time: 11/14/22 0950
Relinquished by:	Company: CR	Date/Time: 11/14/22 0945	Received in Laboratory by:	Company: TAL	Date/Time: 11-15-22 10:03

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11/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 176468**
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Charles

Cooler Received on 11-15-22 Opened on 11-15-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time **Storage Location**

Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Con Med	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

Sample IDs are 111222, but sampling dates on COC are 11/11/22. Samples were relinquished on 11/12/22. Sampling dates were logged as 11/12/22. dmc 11/15/22

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 1764468

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 30, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176468-1
Sample date: 2022-11-11
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-30
Number of Samples:6
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SURROGATE recoveries were outside of laboratory control limits biased HIGH for 1 of 1 surrogates in the tests/samples noted. Associated results were non-detect so were not affected by the high bias and qualification of results was not required. GCMS-SIM VOC samples -005, -006. NOTE: QC batch 552553 LCS high bias surrogate recoveries were not used to qualify field sample results.

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS-SIM VOC QC batch 552553.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176468-1

	Sample Name:	TRIP BLANK_58				MW-139S_111122				MW-140S_111122				MW-79SR_111122				MW-79D_111122				DUP-11			
	Lab Sample ID:	2401764681				2401764682				2401764683				2401764684				2401764685				2401764686			
	Sample Date:	11/11/2022				11/11/2022				11/11/2022				11/11/2022				11/11/2022				11/11/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																									
OSW-8260D																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	2.6	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

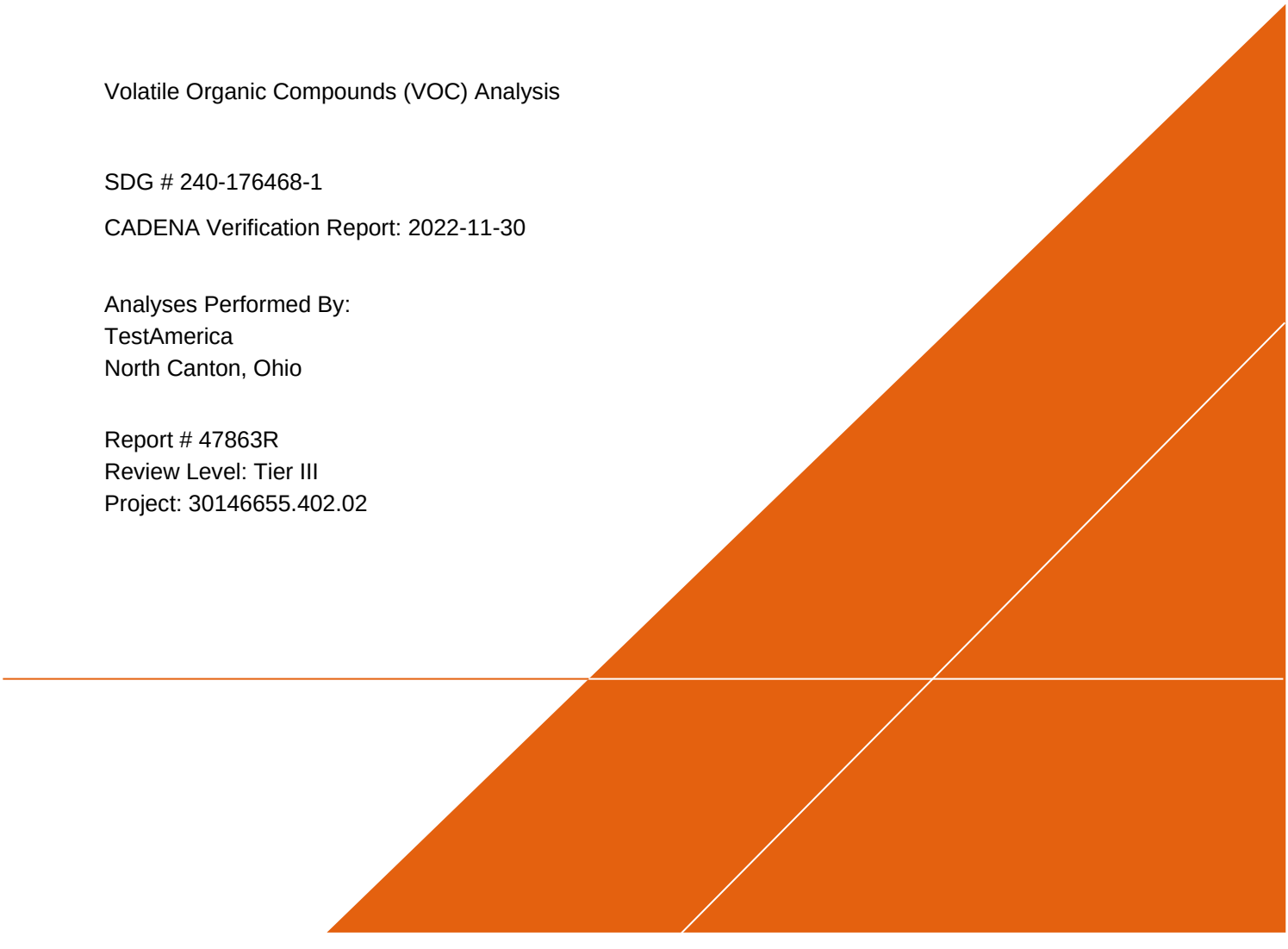
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176468-1

CADENA Verification Report: 2022-11-30

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47863R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176468-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_58	240-176468-1	Water	11/11/22		X	
MW-139S_111122	240-176468-2	Water	11/11/22		X	X
MW-140S_111122	240-176468-3	Water	11/11/22		X	X
MW-79SR_111122	240-176468-4	Water	11/11/22		X	X
MW-79D_111122	240-176468-5	Water	11/11/22		X	X
DUP-11	240-176468-6	Water	11/11/22	MW-139S_111122	X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

DATA REVIEW

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD
MW-139S_111122 / DUP-11	All target compounds	U	U	AC

Notes:

U – Non detect

AC – Acceptable

The calculated differences between the parent sample and field duplicate were acceptable.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hrishikesh Upadhyaya

SIGNATURE:

DATE: December 08, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 08, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

2020

Chain of Custody Record

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

MICHIGAN 190

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Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: GARY SCHAFER	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_58	11/11/22	---		1						1					N	G	X	X	X	X	X	X						1 Trip Blank
~~MW-139S_111222~~	11/11/22	1111		6						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260B 3 VOAs for 8260B SIM
~~MW-140S_111222~~	11/11/22	1226		6						6					N	G	X	X	X	X	X	X	X					
~~MW-79SR_111222~~	11/11/22	1341		6						6					N	G	X	X	X	X	X	X	X					
~~MW-79D_111222~~	11/11/22	1446		6						6					N	G	X	X	X	X	X	X	X					
DUP-11	11/11/22	—		6						6					N	G	X	X	X	X	X	X	X					

Revised COCs 11/16/22 - C.Weaver
Corrected Sample ID's

MW-139S_111122
MW-140S_111122
MW-79SR_111122
MW-79D_111122

240-176468 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sam
☐ Return to Client ☑ Disposal By Lab ☐ Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: BOSTON POST ROW
Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
GARY SCHAFER (GW)	ARCADIS	11/12/22 1530	NOVI COLD STORAGE	ARCADIS	11/12/22 1530
	ARCADIS	11/14/22 0950		EET	11/14/22 0950
		(1/14/22 096		EET	11-15-22 10:00

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Client Sample ID: TRIP BLANK_58

Lab Sample ID: 240-176468-1

Date Collected: 11/11/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 14:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 14:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 14:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 14:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/18/22 14:12*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 14:12*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 14:12*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/18/22 14:12*	*1*

Client Sample ID: MW-139S_111122

Lab Sample ID: 240-176468-2

Date Collected: 11/11/22 11:11
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/17/22 19:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 16:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 16:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 16:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 16:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/18/22 16:42*	*1*
4-Bromofluorobenzene (Surr)	*76*		*56 - 136*		*11/18/22 16:42*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 16:42*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 16:42*	*1*

Client Sample ID: MW-140S_111122

Lab Sample ID: 240-176468-3

Date Collected: 11/11/22 12:26
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 06:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 06:34*	*1*

Client Sample ID: MW-140S_111122
Lab Sample ID: 240-176468-3
Date Collected: 11/11/22 12:26
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 17:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 17:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 17:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/18/22 17:07*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/18/22 17:07*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 17:07*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 17:07*	*1*

Client Sample ID: MW-79SR_111122
Lab Sample ID: 240-176468-4
Date Collected: 11/11/22 13:41
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/17/22 21:09*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 17:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 17:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 17:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:32	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/18/22 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/18/22 17:32*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/18/22 17:32*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*11/18/22 17:32*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/18/22 17:32*	*1*

Client Sample ID: MW-79D_111122
Lab Sample ID: 240-176468-5
Date Collected: 11/11/22 14:46
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 21:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*	*S1+*	*66 - 120*		*11/17/22 21:33*	*1*

Client Sample ID: MW-79D_111122
Lab Sample ID: 240-176468-5

Date Collected: 11/11/22 14:46
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 17:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 17:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 17:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 17:58	1
Vinyl chloride	**2.6**		1.0	0.45	ug/L			11/18/22 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 17:58*	*1*
4-Bromofluorobenzene (Surr)	*72*		*56 - 136*		*11/18/22 17:58*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/18/22 17:58*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/18/22 17:58*	*1*

Client Sample ID: DUP-11
Lab Sample ID: 240-176468-6

Date Collected: 11/11/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 21:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*	*S1+*	*66 - 120*		*11/17/22 21:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/18/22 18:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/18/22 18:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/18/22 18:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/18/22 18:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/18/22 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*11/18/22 18:23*	*1*
4-Bromofluorobenzene (Surr)	*74*		*56 - 136*		*11/18/22 18:23*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/18/22 18:23*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/18/22 18:23*	*1*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:21:42 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176621-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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12/2/2022 8:21:42 AM

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Job ID: 240-176621-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176621-1

Comments
No additional comments.

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 1.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176621-1	TRIP BLANK_196	Water	11/15/22 00:00	11/17/22 08:00
240-176621-2	MW-136S_111522	Water	11/15/22 11:20	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Client Sample ID: TRIP BLANK_196 — Lab Sample ID: 240-176621-1

No Detections.

Client Sample ID: MW-136S_111522 — Lab Sample ID: 240-176621-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Client Sample ID: TRIP BLANK_196
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176621-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 14:19*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 14:19*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 14:19*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/25/22 14:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Client Sample ID: MW-136S_111522
Date Collected: 11/15/22 11:20
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176621-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/23/22 15:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 18:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 18:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 18:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:29	1
Vinyl chloride	**3.2**		1.0	0.45	ug/L			11/25/22 18:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/25/22 18:29*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/25/22 18:29*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 18:29*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/25/22 18:29*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176621-1	TRIP BLANK_196	97	78	91	92
240-176621-2	MW-136S_111522	100	73	91	97
240-176621-2 MS	MW-136S_111522	84	95	95	84
240-176621-2 MSD	MW-136S_111522	85	94	96	85
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176555-B-1 MS	Matrix Spike	77
240-176555-B-1 MSD	Matrix Spike Duplicate	81
240-176621-2	MW-136S_111522	76
LCS 240-553221/3	Lab Control Sample	76
MB 240-553221/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: MW-136S_111522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: MW-136S_111522
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: MW-136S_111522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553221/4
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 06:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/23/22 06:09*	*1*

Lab Sample ID: LCS 240-553221/3
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.27		ug/L		93	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176555-B-1 MS
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	14		10.0	26.1		ug/L		116	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: 240-176555-B-1 MSD
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	14		10.0	27.3		ug/L		128	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

GC/MS VOA

Analysis Batch: 553221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176621-2	MW-136S_111522	Total/NA	Water	8260D SIM	
MB 240-553221/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553221/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176555-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176555-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176621-1	TRIP BLANK_196	Total/NA	Water	8260D	
240-176621-2	MW-136S_111522	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-2 MS	MW-136S_111522	Total/NA	Water	8260D	
240-176621-2 MSD	MW-136S_111522	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Client Sample ID: TRIP BLANK_196

Lab Sample ID: 240-176621-1

Date Collected: 11/15/22 00:00

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 14:19

Client Sample ID: MW-136S_111522

Lab Sample ID: 240-176621-2

Date Collected: 11/15/22 11:20

Matrix: Water

Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 18:29
Total/NA	Analysis	8260D SIM		1	553221	CS	EET CAN	11/23/22 15:27

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	
Phone: 248-994-2240	Sampler Name: Samantha Szpanchler	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day	
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:		
Project Number: 30146655.402.04	Shipping/Tracking No:		
PO # 30146655.402.04			

COC No: 1 of 1 COCs

For lab use only: Walk-in client; Lab sampling; Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_196	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-136S_111522	11/15/22	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176621 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Capitol Row

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by: Samantha Szpanchler	Arcadis	11/15/22 16:10	Received by: Arcadis storage	Arcadis	11/15/22 16:10
Relinquished by:	ARCADIS	11/16/22 1035	Received by:	EETA	11/16/22 1035
Relinquished by:	EETA	11/16/22 10:40	Received in Laboratory by: Rachelle Hamlett	EETNC	11-17-22 800

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176621
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-17-22 Opened on 11-17-22

Cooler unpacked by: Rachelle Haidet

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A ~~Foam Box~~ Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes (No)
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No (NA)
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y/N)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420216	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

CMR 11-17-22

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176621

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

December 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176621-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176621-1

		Sample Name:	TRIP BLANK_196				MW-136S_111522			
		Lab Sample ID:	2401766211				2401766212			
		Sample Date:	11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.2	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176621-1

CADENA Verification Report: 2022-12-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47933R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176621-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_196	240-176621-1	Water	11/15/2022		X	
MW-136S_111522	240-176621-2	Water	11/15/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 14, 2022

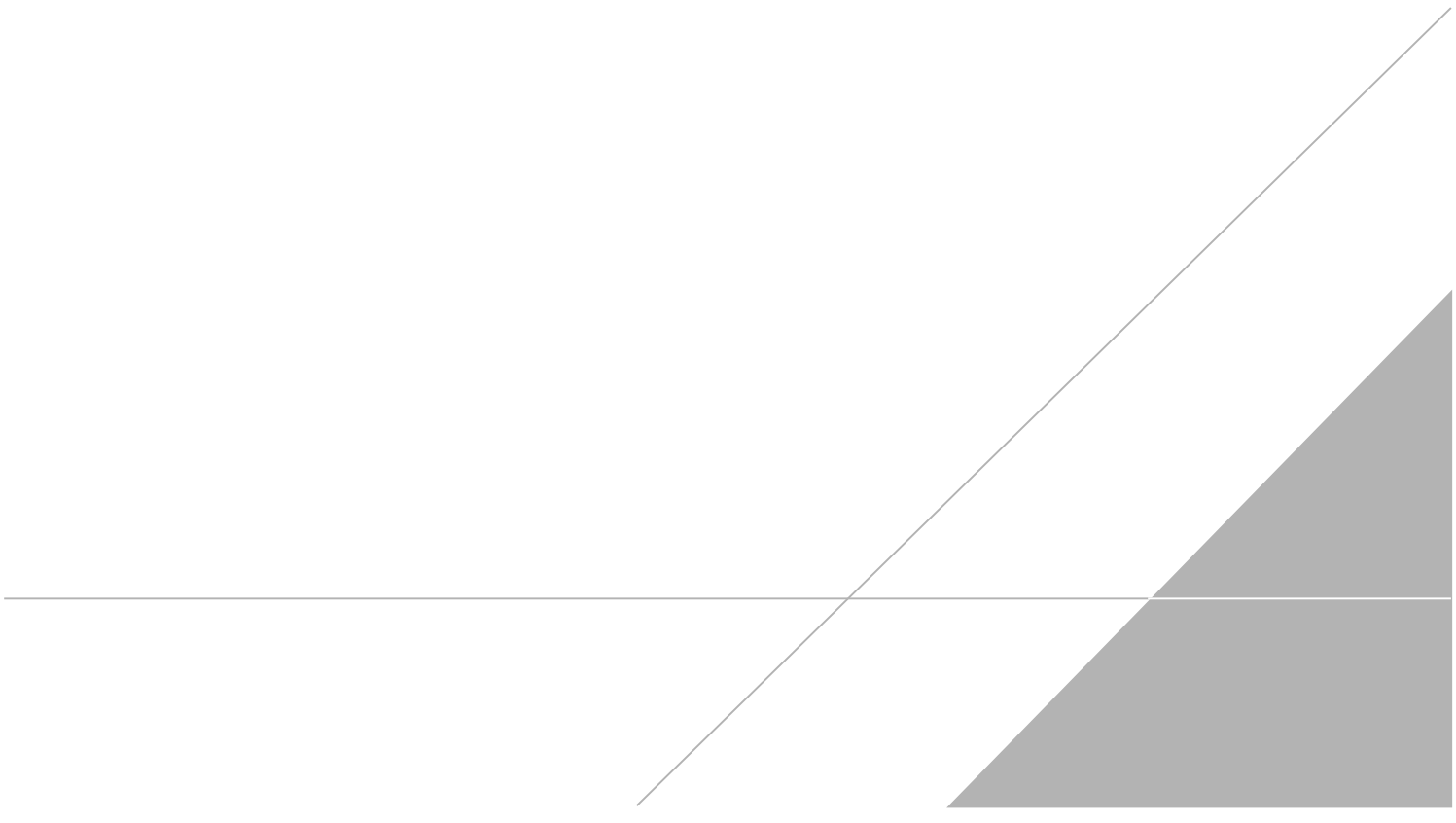
PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Szpanchler	TAT if different from below: 10 day; 3 weeks; ✓ 2 weeks; 1 week; 2 days; 1 day		Walk-in client; Lab sampling
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP Off-Site	Shipping/Tracking No:			
Project Number: 30146655.402.04				
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_196	11/15/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-136S_111522	11/15/22	1120		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176621 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Capitol Row

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by: Samantha Szpanchler	Arcadis	11/15/22 16:10	Received by: Nova Storage	Arcadis	11/15/22 16:10
Relinquished by:	ARCADIS	11/16/22 1035	Received by:	EETA	11/16/22 1035
Relinquished by:	EETA	11/16/22 10:40	Received in Laboratory by: Rachelle Hamlet	EETNC	11-17-22 800

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12/2/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Client Sample ID: TRIP BLANK_196
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176621-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 14:19*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 14:19*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 14:19*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/25/22 14:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176621-1

Client Sample ID: MW-136S_111522
Date Collected: 11/15/22 11:20
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176621-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/23/22 15:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 18:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 18:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 18:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 18:29	1
Vinyl chloride	**3.2**		1.0	0.45	ug/L			11/25/22 18:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/25/22 18:29*	*1*
4-Bromofluorobenzene (Surr)	*73*		*56 - 136*		*11/25/22 18:29*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 18:29*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/25/22 18:29*	*1*

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:30:12 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176845-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
12/2/2022 8:30:12 AM

Authorized for release by
Opal Johnson, Project Manager II
Opal.Johnson@et.eurofinsus.com
Designee for
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Job ID: 240-176845-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176845-1

Comments
No additional comments.

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176845-1	TRIP BLANK_190	Water	11/17/22 00:00	11/19/22 08:00
240-176845-2	MW-137S_111722	Water	11/17/22 11:55	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Client Sample ID: TRIP BLANK_190 — Lab Sample ID: 240-176845-1

No Detections.

Client Sample ID: MW-137S_111722 — Lab Sample ID: 240-176845-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.73	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Client Sample ID: TRIP BLANK_190

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176845-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 09:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 09:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 09:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 09:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 09:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 09:51*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 09:51*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 09:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Client Sample ID: MW-137S_111722
Date Collected: 11/17/22 11:55
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176845-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 08:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/29/22 08:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 15:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 15:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 15:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 15:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 15:21	1
Vinyl chloride	**0.73**	**J**	1.0	0.45	ug/L			11/29/22 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/29/22 15:21*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 15:21*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/22 15:21*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 15:21*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176843-D-5 MS	Matrix Spike	85	99	104	99
240-176843-D-5 MSD	Matrix Spike Duplicate	83	98	104	96
240-176845-1	TRIP BLANK_190	91	99	103	99
240-176845-2	MW-137S_111722	90	99	102	98
LCS 240-553659/3	Lab Control Sample	84	101	105	97
MB 240-553659/4	Method Blank	91	99	101	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176845-2	MW-137S_111722	104
240-176901-I-2 MS	Matrix Spike	99
240-176901-O-2 MSD	Matrix Spike Duplicate	104
LCS 240-553633/3	Lab Control Sample	109
MB 240-553633/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553659/4
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 06:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 06:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 06:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 06:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 06:53*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 06:53*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 06:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 06:53*	*1*

Lab Sample ID: LCS 240-553659/3
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		97	77 - 123
Tetrachloroethene	25.0	25.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	25.0	25.3		ug/L		101	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	28.4		ug/L		114	56 - 135
cis-1,2-Dichloroethene	4.8		25.0	32.9		ug/L		112	66 - 128
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131
trans-1,2-Dichloroethene	0.74	J	25.0	24.1		ug/L		93	56 - 136
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124
Vinyl chloride	5.4		25.0	32.1		ug/L		107	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176843-D-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176843-D-5 MSD
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	4	26
cis-1,2-Dichloroethene	4.8		25.0	31.3		ug/L		106	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131	2	20
trans-1,2-Dichloroethene	0.74	J	25.0	23.2		ug/L		90	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	2	15
Vinyl chloride	5.4		25.0	30.9		ug/L		102	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.98		ug/L		100	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-I-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

GC/MS VOA

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176845-2	MW-137S_111722	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176901-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176845-1	TRIP BLANK_190	Total/NA	Water	8260D	
240-176845-2	MW-137S_111722	Total/NA	Water	8260D	
MB 240-553659/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553659/3	Lab Control Sample	Total/NA	Water	8260D	
240-176843-D-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-176843-D-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Client Sample ID: TRIP BLANK_190

Lab Sample ID: 240-176845-1

Date Collected: 11/17/22 00:00

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 09:51

Client Sample ID: MW-137S_111722

Lab Sample ID: 240-176845-2

Date Collected: 11/17/22 11:55

Matrix: Water

Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 15:21
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 08:25

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	TAT if different from below		Walk-in client
Phone: 248-994-2240	Sampler Name: S. Sukaria	10 day	3 weeks / 2 weeks / 1 week / 2 days / 1 day	Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_190	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-137s_111722	11/17/22	1155		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176845 Chain of Custody

Possible Hazard Identification
✓ Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return to Client ✓ Disposal By Lab Archive For Months

Special Instructions/QC Requirements & Comments:
Sample Address: Capitol and Brewster Row
Submit all results through Cadena at itomalia@cadenaco.com. Cadena #E203631
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sara Sukaria	Arcadis	11/17/22 1350	Arcadis Cold Storage	Arcadis	11/17/22 1550
	ARCADIS	11/18/22 0945		EETA	11/18/22 0945
	EETA	11/18/22 1002	Received in Laboratory by:	BEC	11/19/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176845
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. A. A.

Cooler Received on 11/19/22 Opened on 11/19/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # (5) Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

DNE 11-21-22

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176845-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176845-1

		Sample Name:	TRIP BLANK_190				MW-137S_111722			
		Lab Sample ID:	2401768451				2401768452			
		Sample Date:	11/17/2022				11/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.73	1.0	ug/l	J
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

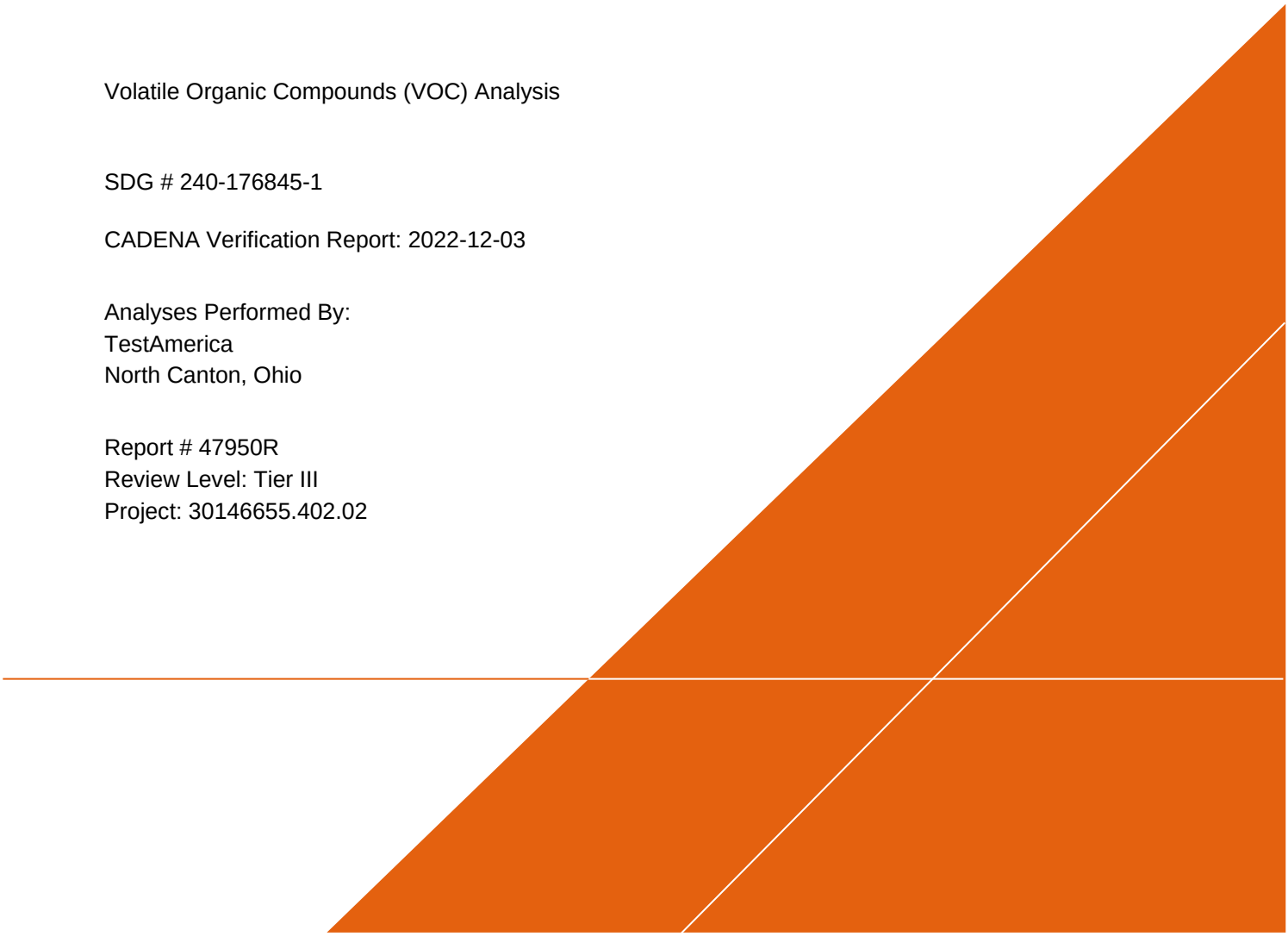
Volatile Organic Compounds (VOC) Analysis

SDG # 240-176845-1

CADENA Verification Report: 2022-12-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47950R
Review Level: Tier III
Project: 30146655.402.02



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176845-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_190	240-176845-1	Water	11/17/22		X	
MW-137S_111722	240-176845-2	Water	11/17/22		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999), as appropriate.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample ID	Initial / Continuing	Compound	Criteria
TRIP BLANK_190 MW-137S_111722	Initial Calibration Verification %D	1,1-Dichloroethene	30.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF <0.05	Non-detect	R
		Detect	J
	RRF <0.01[1]	Non-detect	R

Initial/Continuing	Criteria	Sample Result	Qualification
		Detect	J
	RRF >0.05 or RRF >0.01[1]	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Initial / Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

[1]RRF of 0.01 only applies to compounds which are typically poor responding compounds

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample was not collected for samples from this SDG.

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Initial / Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Vinayak Hegde

SIGNATURE:

DATE: December 15, 2022

PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: S. Sukaria	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30146655.402.04	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_190	11/17/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-137s_111722	11/17/22	1155		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176845 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Capitol and Brewster Row

Submit all results through Cadena at itomalia@cadenaco.com. Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sara Sukaria	Arcadis	11/17/22 1350	Arcadis Cold Storage	Arcadis	11/17/22 1550
	ARCADIS	11/18/22 0945		EETA	11/18/22 0945
	EETA	11/18/22 1002	Received in Laboratory by:	BEC	11/19/22 8:00

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12/2/2022

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Client Sample ID: TRIP BLANK_190

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176845-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 09:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 09:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 09:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 09:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 09:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 09:51*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 09:51*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 09:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176845-1

Client Sample ID: MW-137S_111722
Date Collected: 11/17/22 11:55
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176845-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 08:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/29/22 08:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 15:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 15:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 15:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 15:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 15:21	1
Vinyl chloride	**0.73**	**J**	1.0	0.45	ug/L			11/29/22 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/29/22 15:21*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 15:21*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/29/22 15:21*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/29/22 15:21*	*1*

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:33:58 AM

JOB DESCRIPTION

Ford LTP - Off Site

JOB NUMBER

240-176528-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Job ID: 240-176528-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176528-1

Receipt
The samples were received on 11/16/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.9°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176528-1	TRIP BLANK_221	Water	11/14/22 00:00	11/16/22 08:00
240-176528-2	MW-80SR_111422	Water	11/14/22 10:46	11/16/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Client Sample ID: TRIP BLANK_221 — Lab Sample ID: 240-176528-1

No Detections.

Client Sample ID: MW-80SR_111422 — Lab Sample ID: 240-176528-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	4.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Client Sample ID: TRIP BLANK_221

Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176528-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/25/22 13:29*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 13:29*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/25/22 13:29*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/25/22 13:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Client Sample ID: MW-80SR_111422
Date Collected: 11/14/22 10:46
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176528-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 01:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/23/22 01:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 17:39	1
Vinyl chloride	**4.2**		1.0	0.45	ug/L			11/25/22 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 17:39*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 17:39*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 17:39*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/25/22 17:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176528-1	TRIP BLANK_221	93	78	92	90
240-176528-2	MW-80SR_111422	97	75	91	94
240-176621-A-2 MS	Matrix Spike	84	95	95	84
240-176621-D-2 MSD	Matrix Spike Duplicate	85	94	96	85
LCS 240-553445/5	Lab Control Sample	86	92	97	88
MB 240-553445/8	Method Blank	89	77	91	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176528-2	MW-80SR_111422	81
240-176530-B-2 MS	Matrix Spike	79
240-176530-B-2 MSD	Matrix Spike Duplicate	81
LCS 240-553220/3	Lab Control Sample	79
MB 240-553220/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553445/8
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*11/25/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*77*		*56 - 136*		*11/25/22 13:03*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 13:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/25/22 13:03*	*1*

Lab Sample ID: LCS 240-553445/5
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	28.1		ug/L		112	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.9		ug/L		92	76 - 123
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	75 - 124
Trichloroethene	25.0	21.7		ug/L		87	70 - 122
Vinyl chloride	12.5	13.5		ug/L		108	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		97	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	21.4		ug/L		85	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		84	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	3.2		12.5	15.5		ug/L		99	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176621-A-2 MS
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-176621-D-2 MSD
Matrix: Water
Analysis Batch: 553445

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.9		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	22.4		ug/L		90	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	4	15
Trichloroethene	1.0	U	25.0	19.7		ug/L		79	61 - 124	0	15
Vinyl chloride	3.2		12.5	14.4		ug/L		90	43 - 157	8	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553220/5
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 18:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/22/22 18:19*	*1*

Lab Sample ID: LCS 240-553220/3
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.37		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MS
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MSD
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.85		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

GC/MS VOA

Analysis Batch: 553220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176528-2	MW-80SR_111422	Total/NA	Water	8260D SIM	
MB 240-553220/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553220/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176530-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176530-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176528-1	TRIP BLANK_221	Total/NA	Water	8260D	
240-176528-2	MW-80SR_111422	Total/NA	Water	8260D	
MB 240-553445/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553445/5	Lab Control Sample	Total/NA	Water	8260D	
240-176621-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176621-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Client Sample ID: TRIP BLANK_221

Lab Sample ID: 240-176528-1

Date Collected: 11/14/22 00:00

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 13:29

Client Sample ID: MW-80SR_111422

Lab Sample ID: 240-176528-2

Date Collected: 11/14/22 10:46

Matrix: Water

Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553445	LEE	EET CAN	11/25/22 17:39
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/23/22 01:55

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

3.9/3.9

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Leticia Ferrelin	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
a TRIP BLANK_221	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-8DSR_111422	11/14/22	10:46		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176528 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Brewster ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by: Leticia Ferrelin	Arcadis	11/14/22 16:20	Novi cold Storage	Arcadis	11/14/22 16:20
Relinquished by:	Arcadis	11/15/22 0900	J. Hall	EEtA	11/15/22 0900
Relinquished by:	EEtA	11/15/22 1145	Rachelle Hazlett	EEtA	11-16 08 800

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176528
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-16-22 Opened on 11-16-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420IG	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 03, 2022

Kris Hinskey
Arcadis Inc
10559 Citation Ave
Suite 100
Brighton, MI 48116

CADENA project ID: E203631
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater
Project number: 30146655.402.04 off-site
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176528-1
Sample date: 2022-11-14
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-03
Number of Samples:2
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203631
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176528-1

		Sample Name:	TRIP BLANK_221				MW-80SR_111422			
		Lab Sample ID:	2401765281				2401765282			
		Sample Date:	11/14/2022				11/14/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC									
OSW-8260D									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	4.2	1.0	ug/l	---
OSW-8260DSIM									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---

Ford Motor Company – Livonia Transmission Project

DATA REVIEW

Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-176528-1

CADENA Verification Report: 2022-12-03

Analyses Performed By:
TestAmerica
North Canton, Ohio

Report # 47930R
Review Level: Tier III
Project: 30146655.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-176528-1 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III) include a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					VOC	VOC SIM
TRIP BLANK_221	240-176528-1	Water	11/14/2022		X	
MW-80SR_111422	240-176528-2	Water	11/14/2022		X	X

DATA REVIEW

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA REVIEW

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260D and 8260D SIM. Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 November 2020 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified, and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

  UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

  J+ The result is an estimated quantity, but the result may be biased high.

  J- The result is an estimated quantity, but the result may be biased low.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260D/8260D-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time criteria.

2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable, and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate sample is not collected for samples from this SDG.

DATA REVIEW

6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: 8260D/8260D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/Preservation		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Field Duplicate RPD	X				X
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Hareesha Naik

SIGNATURE:

DATE: December 14, 2022

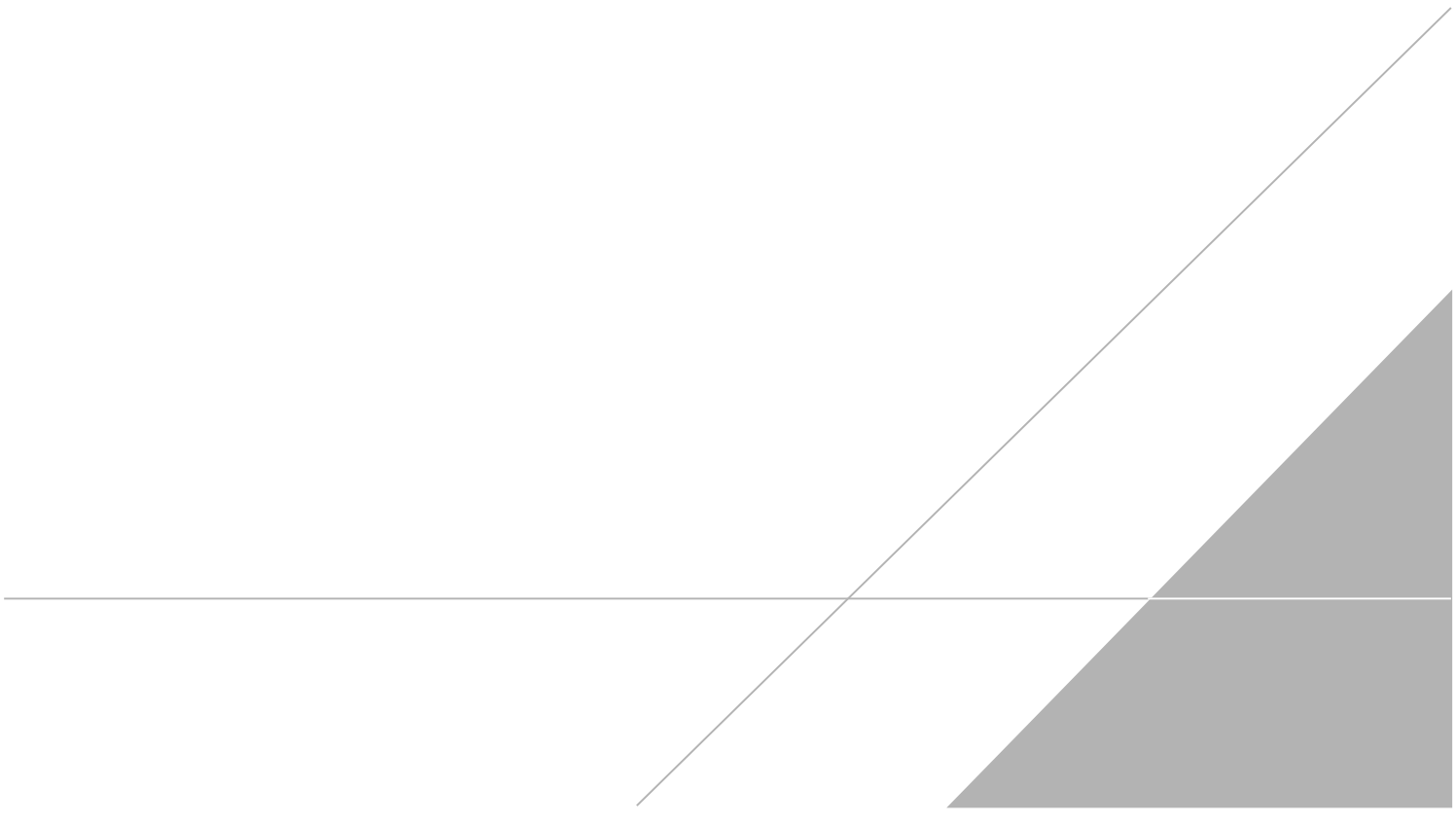
PEER REVIEW: Andrew Korycinski

DATE: December 17, 2022

NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



MICHIGAN
190

Chain of Custody Record

3.9/3.9

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Leticia Ferrelin	TAT if different from below: 10 day; 3 weeks, 2 weeks, 1 week, 2 days, 1 day		Walk-in client; Lab sampling
Project Name: Ford LTP Off-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.402.04	Shipping/Tracking No:			
PO # 30146655.402.04				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
a TRIP BLANK_221	11/14/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-8DSR_111422	11/14/22	10:46		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM

240-176528 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Sample Address: Brewster ROW

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203631

Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Leticia Ferrelin	Arcadis	11/14/22 16:20	Novi cold Storage	Arcadis	11/14/22 16:20
	ARCADIS	11/15/22 0900	J. Hall	EEA	11/15/22 0900
	EEA	11/15/22 1145	Rachelle Hazlett	EESNC	11-16 08 800

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12/2/2022

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Client Sample ID: TRIP BLANK_221

Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176528-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 13:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 13:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 13:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 13:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/25/22 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/25/22 13:29*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/25/22 13:29*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/25/22 13:29*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/25/22 13:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - Off Site

Job ID: 240-176528-1

Client Sample ID: MW-80SR_111422
Date Collected: 11/14/22 10:46
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176528-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 01:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/23/22 01:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/25/22 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/25/22 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/25/22 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/25/22 17:39	1
Vinyl chloride	**4.2**		1.0	0.45	ug/L			11/25/22 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/25/22 17:39*	*1*
4-Bromofluorobenzene (Surr)	*75*		*56 - 136*		*11/25/22 17:39*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/25/22 17:39*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/25/22 17:39*	*1*

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-162581-1
Client Project/Site: Ford LTP - On-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
2/24/2022 8:27:17 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-162581-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-162581-1

Comments
No additional comments.

Receipt
The samples were received on 2/10/2022 11:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.9º C and 4.1º C.

GC/MS VOA
Method 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-517982.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-162581-1	TRIP BLANK_71	Water	02/08/22 00:00	02/10/22 11:00
240-162581-2	MW-20_020822	Water	02/08/22 11:35	02/10/22 11:00
240-162581-3	MW-220S_020822	Water	02/08/22 12:30	02/10/22 11:00
240-162581-4	MW-64_020822	Water	02/08/22 13:40	02/10/22 11:00
240-162581-5	MW-69_020822	Water	02/08/22 14:50	02/10/22 11:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Client Sample ID: TRIP BLANK_71 — Lab Sample ID: 240-162581-1

No Detections.

Client Sample ID: MW-20_020822 — Lab Sample ID: 240-162581-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	25		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	4.0		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-220S_020822 — Lab Sample ID: 240-162581-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	10		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	1.8		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-64_020822 — Lab Sample ID: 240-162581-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.7		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	68		2.0	0.92	ug/L	2		8260B	Total/NA
trans-1,2-Dichloroethene	2.0		1.0	0.51	ug/L	1		8260B	Total/NA
Vinyl chloride	11		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-69_020822 — Lab Sample ID: 240-162581-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.8		2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	50		1.0	0.46	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	1.3		1.0	0.51	ug/L	1		8260B	Total/NA
Vinyl chloride	7.9		1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Client Sample ID: TRIP BLANK_71

Date Collected: 02/08/22 00:00
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/11/22 13:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/11/22 13:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 13:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/11/22 13:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 13:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/11/22 13:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*02/11/22 13:08*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*02/11/22 13:08*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*02/11/22 13:08*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*02/11/22 13:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Client Sample ID: MW-20_020822
Date Collected: 02/08/22 11:35
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/11/22 17:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*02/11/22 17:18*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/11/22 13:31	1
cis-1,2-Dichloroethene	**25**		1.0	0.46	ug/L			02/11/22 13:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 13:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/11/22 13:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 13:31	1
Vinyl chloride	**4.0**		1.0	0.45	ug/L			02/11/22 13:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*02/11/22 13:31*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*02/11/22 13:31*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*02/11/22 13:31*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*02/11/22 13:31*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Client Sample ID: MW-220S_020822
Date Collected: 02/08/22 12:30
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/11/22 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*02/11/22 17:43*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/11/22 13:53	1
cis-1,2-Dichloroethene	**10**		1.0	0.46	ug/L			02/11/22 13:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/11/22 13:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 13:53	1
Vinyl chloride	**1.8**		1.0	0.45	ug/L			02/11/22 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*02/11/22 13:53*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*02/11/22 13:53*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*02/11/22 13:53*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*02/11/22 13:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Client Sample ID: MW-64_020822
Date Collected: 02/08/22 13:40
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.7**		2.0	0.86	ug/L			02/11/22 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*02/11/22 18:08*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/11/22 14:16	1
cis-1,2-Dichloroethene	**68**		2.0	0.92	ug/L			02/14/22 12:46	2
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 14:16	1
trans-1,2-Dichloroethene	**2.0**		1.0	0.51	ug/L			02/11/22 14:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 14:16	1
Vinyl chloride	**11**		1.0	0.45	ug/L			02/11/22 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*02/11/22 14:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*02/14/22 12:46*	*2*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*02/11/22 14:16*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/14/22 12:46*	*2*
Toluene-d8 (Surr)	*94*		*78 - 122*		*02/11/22 14:16*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*02/14/22 12:46*	*2*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*02/11/22 14:16*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*02/14/22 12:46*	*2*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Client Sample ID: MW-69_020822
Date Collected: 02/08/22 14:50
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-5
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.8**		2.0	0.86	ug/L			02/11/22 18:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*02/11/22 18:33*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/11/22 14:38	1
cis-1,2-Dichloroethene	**50**		1.0	0.46	ug/L			02/11/22 14:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 14:38	1
trans-1,2-Dichloroethene	**1.3**		1.0	0.51	ug/L			02/11/22 14:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 14:38	1
Vinyl chloride	**7.9**		1.0	0.45	ug/L			02/11/22 14:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*02/11/22 14:38*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*02/11/22 14:38*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*02/11/22 14:38*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*02/11/22 14:38*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-162581-1	TRIP BLANK_71	94	101	92	93
240-162581-2	MW-20_020822	94	99	91	94
240-162581-3	MW-220S_020822	97	98	91	95
240-162581-4	MW-64_020822	98	100	94	95
240-162581-4	MW-64_020822	96	102	95	96
240-162581-5	MW-69_020822	95	101	94	94
240-162582-E-2 MS	Matrix Spike	99	102	96	99
240-162582-H-2 MSD	Matrix Spike Duplicate	95	101	93	95
LCS 240-517868/5	Lab Control Sample	92	99	91	95
LCS 240-517982/5	Lab Control Sample	98	104	95	98
LCSD 240-517868/6	Lab Control Sample Dup	94	100	92	95
LCSD 240-517982/6	Lab Control Sample Dup	97	102	93	97
MB 240-517868/9	Method Blank	94	98	92	94
MB 240-517982/9	Method Blank	95	99	94	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-162581-2	MW-20_020822	82
240-162581-3	MW-220S_020822	80
240-162581-4	MW-64_020822	82
240-162581-5	MW-69_020822	83
240-162582-I-2 MS	Matrix Spike	81
240-162582-O-2 MSD	Matrix Spike Duplicate	81
LCS 240-517921/4	Lab Control Sample	82
MB 240-517921/5	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(10-150)
MRL 240-517921/6	Lab Control Sample	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-517868/9
Matrix: Water
Analysis Batch: 517868

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/11/22 12:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/11/22 12:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 12:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/11/22 12:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/11/22 12:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/11/22 12:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*02/11/22 12:14*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*02/11/22 12:14*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*02/11/22 12:14*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*02/11/22 12:14*	*1*

Lab Sample ID: LCS 240-517868/5
Matrix: Water
Analysis Batch: 517868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene			20.0	19.9		ug/L		99	63 - 134		
cis-1,2-Dichloroethene			20.0	18.0		ug/L		90	77 - 123		
Tetrachloroethene			20.0	16.8		ug/L		84	76 - 123		
trans-1,2-Dichloroethene			20.0	18.2		ug/L		91	75 - 124		
Trichloroethene			20.0	17.9		ug/L		89	70 - 122		
Vinyl chloride			20.0	17.6		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*91*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: LCSD 240-517868/6
Matrix: Water
Analysis Batch: 517868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene			20.0	22.1		ug/L		110	63 - 134	10	35
cis-1,2-Dichloroethene			20.0	19.9		ug/L		99	77 - 123	10	35
Tetrachloroethene			20.0	18.7		ug/L		93	76 - 123	10	35
trans-1,2-Dichloroethene			20.0	20.4		ug/L		102	75 - 124	12	35
Trichloroethene			20.0	19.8		ug/L		99	70 - 122	10	35
Vinyl chloride			20.0	19.6		ug/L		98	60 - 144	11	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 240-517868/6
Matrix: Water
Analysis Batch: 517868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: 240-162582-E-2 MS
Matrix: Water
Analysis Batch: 517868

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	20.0	20.8		ug/L		104	56 - 135
cis-1,2-Dichloroethene	0.73	J	20.0	18.7		ug/L		90	66 - 128
Tetrachloroethene	1.0	U	20.0	16.7		ug/L		84	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 136
Trichloroethene	1.0	U	20.0	17.2		ug/L		86	61 - 124
Vinyl chloride	1.0	U	20.0	21.3		ug/L		107	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	96		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-162582-H-2 MSD
Matrix: Water
Analysis Batch: 517868

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	22.3		ug/L		112	56 - 135	7	26
cis-1,2-Dichloroethene	0.73	J	20.0	20.4		ug/L		99	66 - 128	9	14
Tetrachloroethene	1.0	U	20.0	17.8		ug/L		89	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	20.0	20.5		ug/L		102	56 - 136	10	15
Trichloroethene	1.0	U	20.0	18.8		ug/L		94	61 - 124	9	15
Vinyl chloride	1.0	U	20.0	21.3		ug/L		106	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	101		56 - 136
Toluene-d8 (Surr)	93		78 - 122
Dibromofluoromethane (Surr)	95		73 - 120

Lab Sample ID: MB 240-517982/9
Matrix: Water
Analysis Batch: 517982

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/14/22 12:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/14/22 12:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/14/22 12:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/14/22 12:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/14/22 12:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-517982/9
Matrix: Water
Analysis Batch: 517982

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/14/22 12:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*02/14/22 12:01*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*02/14/22 12:01*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*02/14/22 12:01*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*02/14/22 12:01*	*1*

Lab Sample ID: LCS 240-517982/5
Matrix: Water
Analysis Batch: 517982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene			20.0	23.1		ug/L		116	63 - 134		
cis-1,2-Dichloroethene			20.0	20.4		ug/L		102	77 - 123		
Tetrachloroethene			20.0	18.9		ug/L		95	76 - 123		
trans-1,2-Dichloroethene			20.0	20.9		ug/L		104	75 - 124		
Trichloroethene			20.0	20.2		ug/L		101	70 - 122		
Vinyl chloride			20.0	20.5		ug/L		103	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: LCSD 240-517982/6
Matrix: Water
Analysis Batch: 517982

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene			20.0	22.1		ug/L		110	63 - 134	5	35
cis-1,2-Dichloroethene			20.0	20.2		ug/L		101	77 - 123	1	35
Tetrachloroethene			20.0	18.7		ug/L		94	76 - 123	1	35
trans-1,2-Dichloroethene			20.0	20.3		ug/L		102	75 - 124	2	35
Trichloroethene			20.0	20.1		ug/L		100	70 - 122	0	35
Vinyl chloride			20.0	19.9		ug/L		99	60 - 144	3	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-517921/5
Matrix: Water
Analysis Batch: 517921

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/11/22 16:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*02/11/22 16:28*	*1*

Lab Sample ID: LCS 240-517921/4
Matrix: Water
Analysis Batch: 517921

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	9.73		ug/L		97	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: MRL 240-517921/6
Matrix: Water
Analysis Batch: 517921

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			0.00100	0.000899	J	ng/uL		90	10 - 150		

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*10 - 150*

Lab Sample ID: 240-162582-I-2 MS
Matrix: Water
Analysis Batch: 517921

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-162582-O-2 MSD
Matrix: Water
Analysis Batch: 517921

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

GC/MS VOA

Analysis Batch: 517868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162581-1	TRIP BLANK_71	Total/NA	Water	8260B	
240-162581-2	MW-20_020822	Total/NA	Water	8260B	
240-162581-3	MW-220S_020822	Total/NA	Water	8260B	
240-162581-4	MW-64_020822	Total/NA	Water	8260B	
240-162581-5	MW-69_020822	Total/NA	Water	8260B	
MB 240-517868/9	Method Blank	Total/NA	Water	8260B	
LCS 240-517868/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 240-517868/6	Lab Control Sample Dup	Total/NA	Water	8260B	
240-162582-E-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-162582-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 517921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162581-2	MW-20_020822	Total/NA	Water	8260B SIM	
240-162581-3	MW-220S_020822	Total/NA	Water	8260B SIM	
240-162581-4	MW-64_020822	Total/NA	Water	8260B SIM	
240-162581-5	MW-69_020822	Total/NA	Water	8260B SIM	
MB 240-517921/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-517921/4	Lab Control Sample	Total/NA	Water	8260B SIM	
MRL 240-517921/6	Lab Control Sample	Total/NA	Water	8260B SIM	
240-162582-I-2 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-162582-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 517982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162581-4	MW-64_020822	Total/NA	Water	8260B	
MB 240-517982/9	Method Blank	Total/NA	Water	8260B	
LCS 240-517982/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 240-517982/6	Lab Control Sample Dup	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Client Sample ID: TRIP BLANK_71
Date Collected: 02/08/22 00:00
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	517868	02/11/22 13:08	HMB	TAL CAN

Client Sample ID: MW-20_020822
Date Collected: 02/08/22 11:35
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	517868	02/11/22 13:31	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	517921	02/11/22 17:18	CS	TAL CAN

Client Sample ID: MW-220S_020822
Date Collected: 02/08/22 12:30
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	517868	02/11/22 13:53	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	517921	02/11/22 17:43	CS	TAL CAN

Client Sample ID: MW-64_020822
Date Collected: 02/08/22 13:40
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	517868	02/11/22 14:16	HMB	TAL CAN
Total/NA	Analysis	8260B		2	517982	02/14/22 12:46	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	517921	02/11/22 18:08	CS	TAL CAN

Client Sample ID: MW-69_020822
Date Collected: 02/08/22 14:50
Date Received: 02/10/22 11:00

Lab Sample ID: 240-162581-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	517868	02/11/22 14:38	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	517921	02/11/22 18:33	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162581-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Seth Turner	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:	10 day		Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 71				X						X	AH				N	G	X	X	X	X	X	X		1 Trip Blank
MW-20_020822	2/8/22	1135									AH												X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-220S_020822		1230									AH												X	
MW-64_020822		1340									AH												X	
MW-69_020822		1450									AH												X	

240-162581 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Seth Turner	Arcadis	2/8/22 / 1530	Novi Cold Storage	Arcadis	2/8/22 / 1530
Novi Cold Storage	Arcadis	2/9/22 1315		Eurofins	2-9-22 1315
	Eurofins	2-9-22 1414	Received in Laboratory by:		2-10-22 1100

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 162581
Canton Facility

Client Arcadis Site Name

Cooler Received on 2-10-22 Opened on 2-10-22

Cooler unpacked by: Brandon

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-14 (CF +0.1 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF +0.2°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 162581

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-14 IR-15	4.0	4.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	1-6	1-9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	

DATA VERIFICATION REPORT

February 24, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 162581-1
Sample date: 2022-02-08
Report received by CADENA: 2022-02-24
Initial Data Verification completed by CADENA: 2022-02-24
Number of Samples:5
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, LCS/LCD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-162965-1
Client Project/Site: Ford LTP - On-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
2/28/2022 3:47:27 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Job ID: 240-162965-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-162965-1

Comments
No additional comments.

Receipt
The samples were received on 2/23/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.1º C, 0.2º C and 1.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-162965-1	TRIP BLANK_49	Water	02/19/22 00:00	02/23/22 08:00
240-162965-2	MW-30_021922	Water	02/19/22 10:58	02/23/22 08:00
240-162965-3	MW-209S_021922	Water	02/19/22 12:33	02/23/22 08:00
240-162965-4	MW-41_021922	Water	02/19/22 14:13	02/23/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Client Sample ID: TRIP BLANK_49 — Lab Sample ID: 240-162965-1

No Detections.

Client Sample ID: MW-30_021922 — Lab Sample ID: 240-162965-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	14		2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MW-209S_021922 — Lab Sample ID: 240-162965-3

No Detections.

Client Sample ID: MW-41_021922 — Lab Sample ID: 240-162965-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.5	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	2.1		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	2.1		1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Client Sample ID: TRIP BLANK_49

Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*02/24/22 15:03*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/24/22 15:03*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*02/24/22 15:03*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*02/24/22 15:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Client Sample ID: MW-30_021922
Date Collected: 02/19/22 10:58
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	14		2.0	0.86	ug/L			02/24/22 00:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*02/24/22 00:32*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 15:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 15:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 15:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 15:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 15:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*02/24/22 15:25*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*02/24/22 15:25*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*02/24/22 15:25*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*02/24/22 15:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Client Sample ID: MW-209S_021922
Date Collected: 02/19/22 12:33
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/24/22 00:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*02/24/22 00:59*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 15:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 15:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 15:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 15:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 15:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*02/24/22 15:48*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*02/24/22 15:48*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*02/24/22 15:48*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*02/24/22 15:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Client Sample ID: MW-41_021922
Date Collected: 02/19/22 14:13
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.5**	**J**	2.0	0.86	ug/L			02/24/22 01:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*02/24/22 01:26*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 16:10	1
cis-1,2-Dichloroethene	**2.1**		1.0	0.46	ug/L			02/24/22 16:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 16:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 16:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 16:10	1
Vinyl chloride	**2.1**		1.0	0.45	ug/L			02/24/22 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*02/24/22 16:10*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*02/24/22 16:10*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*02/24/22 16:10*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*02/24/22 16:10*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-162961-A-2 MS	Matrix Spike	84	102	93	83
240-162961-F-2 MSD	Matrix Spike Duplicate	81	101	93	82
240-162965-1	TRIP BLANK_49	86	102	93	87
240-162965-2	MW-30_021922	88	100	94	86
240-162965-3	MW-209S_021922	87	100	92	86
240-162965-4	MW-41_021922	85	98	91	85
LCS 240-518646/5	Lab Control Sample	88	104	93	89
MB 240-518646/8	Method Blank	88	102	91	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-162965-2	MW-30_021922	80
240-162965-3	MW-209S_021922	80
240-162965-4	MW-41_021922	78
240-162970-H-4 MS	Matrix Spike	79
240-162970-N-4 MSD	Matrix Spike Duplicate	79
LCS 240-518603/4	Lab Control Sample	79
MB 240-518603/5	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518646/8
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 11:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 11:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 11:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 11:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 11:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 11:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*02/24/22 11:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/24/22 11:42*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*02/24/22 11:42*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*02/24/22 11:42*	*1*

Lab Sample ID: LCS 240-518646/5
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	19.7		ug/L		98	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		93	77 - 123
Tetrachloroethene	20.0	18.3		ug/L		92	76 - 123
trans-1,2-Dichloroethene	20.0	18.0		ug/L		90	75 - 124
Trichloroethene	20.0	18.2		ug/L		91	70 - 122
Vinyl chloride	20.0	19.4		ug/L		97	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-162961-A-2 MS
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	20.0	17.8		ug/L		89	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124
Vinyl chloride	1.0	U	20.0	17.7		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-162961-A-2 MS
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Lab Sample ID: 240-162961-F-2 MSD
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		86	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.3		ug/L		92	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	17.0		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.0		ug/L		85	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	17.9		ug/L		90	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518603/5
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/23/22 20:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*02/23/22 20:58*	*1*

Lab Sample ID: LCS 240-518603/4
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-H-4 MS
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-N-4 MSD
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

GC/MS VOA

Analysis Batch: 518603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162965-2	MW-30_021922	Total/NA	Water	8260B SIM	
240-162965-3	MW-209S_021922	Total/NA	Water	8260B SIM	
240-162965-4	MW-41_021922	Total/NA	Water	8260B SIM	
MB 240-518603/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-518603/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-162970-H-4 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-162970-N-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 518646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162965-1	TRIP BLANK_49	Total/NA	Water	8260B	
240-162965-2	MW-30_021922	Total/NA	Water	8260B	
240-162965-3	MW-209S_021922	Total/NA	Water	8260B	
240-162965-4	MW-41_021922	Total/NA	Water	8260B	
MB 240-518646/8	Method Blank	Total/NA	Water	8260B	
LCS 240-518646/5	Lab Control Sample	Total/NA	Water	8260B	
240-162961-A-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-162961-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Client Sample ID: TRIP BLANK_49
Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 15:03	TJL1	TAL CAN

Client Sample ID: MW-30_021922
Date Collected: 02/19/22 10:58
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 15:25	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 00:32	CS	TAL CAN

Client Sample ID: MW-209S_021922
Date Collected: 02/19/22 12:33
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 15:48	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 00:59	CS	TAL CAN

Client Sample ID: MW-41_021922
Date Collected: 02/19/22 14:13
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162965-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 16:10	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 01:26	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162965-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name:	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_49	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-30_021922	2/19/22	1058		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-209S_021922	"	1233		6						6					N	G	X	X	X	X	X	X	X	"
MW-41_021922	"	1413		6						6					N	G	X	X	X	X	X	X	X	"

240-162965 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	2/19/22 1540	Novi Cold Storage	Arcadis	2/19/22 1540
Novi Cold Storage	Arcadis	2/22/22 1000		EET	2-22-22 1000
	EET	2-22-22 1400	Received in Laboratory by:	TestAmerica	2-23-22 800

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 162945**
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hamilton

Cooler Received on 2-23-22 Opened on 2-23-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-14 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC157842**
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : _____

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-14 IR-15	0.3	0.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	0.4	0.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	1.3	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	

DATA VERIFICATION REPORT

February 28, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 162965-1
Sample date: 2022-02-19
Report received by CADENA: 2022-02-28
Initial Data Verification completed by CADENA: 2022-02-28
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 162965-1

		Sample Name:	TRIP BLANK_49				MW-30_021922				MW-209S_021922				MW-41_021922			
		Lab Sample ID:	2401629651				2401629652				2401629653				2401629654			
		Sample Date:	2/19/2022				2/19/2022				2/19/2022				2/19/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260B																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.1	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.1	1.0	ug/l	---
	OSW-8260BBSim																	
	1,4-Dioxane	123-91-1					14	2.0	ug/l	---	ND	2.0	ug/l	---	1.5	2.0	ug/l	J

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-162966-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
2/28/2022 3:47:56 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Job ID: 240-162966-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-162966-1

Comments
No additional comments.

Receipt
The samples were received on 2/23/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.1º C, 0.2º C and 1.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-162966-1	TRIP BLANK_44	Water	02/19/22 00:00	02/23/22 08:00
240-162966-2	MW-211S_021922	Water	02/19/22 10:15	02/23/22 08:00
240-162966-3	MW-35_021922	Water	02/19/22 11:50	02/23/22 08:00
240-162966-4	MW-212S_021922	Water	02/19/22 13:35	02/23/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Client Sample ID: TRIP BLANK_44 — Lab Sample ID: 240-162966-1

No Detections.

Client Sample ID: MW-211S_021922 — Lab Sample ID: 240-162966-2

No Detections.

Client Sample ID: MW-35_021922 — Lab Sample ID: 240-162966-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.5		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	3.4		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-212S_021922 — Lab Sample ID: 240-162966-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.0		1.0	0.46	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Client Sample ID: TRIP BLANK_44
Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 16:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 16:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 16:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 16:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 16:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*02/24/22 16:32*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*02/24/22 16:32*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*02/24/22 16:32*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*02/24/22 16:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Client Sample ID: MW-211S_021922
Date Collected: 02/19/22 10:15
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/24/22 01:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*02/24/22 01:53*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 16:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 16:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 16:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 16:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 16:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 16:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*02/24/22 16:55*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*02/24/22 16:55*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*02/24/22 16:55*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*02/24/22 16:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Client Sample ID: MW-35_021922
Date Collected: 02/19/22 11:50
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**3.5**		2.0	0.86	ug/L			02/24/22 02:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*02/24/22 02:19*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 17:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 17:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 17:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 17:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 17:17	1
Vinyl chloride	**3.4**		1.0	0.45	ug/L			02/24/22 17:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*02/24/22 17:17*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/24/22 17:17*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*02/24/22 17:17*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*02/24/22 17:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Client Sample ID: MW-212S_021922
Date Collected: 02/19/22 13:35
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/24/22 02:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*02/24/22 02:46*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 17:39	1
cis-1,2-Dichloroethene	**2.0**		1.0	0.46	ug/L			02/24/22 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 17:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*02/24/22 17:39*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*02/24/22 17:39*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*02/24/22 17:39*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*02/24/22 17:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-162961-A-2 MS	Matrix Spike	84	102	93	83
240-162961-F-2 MSD	Matrix Spike Duplicate	81	101	93	82
240-162966-1	TRIP BLANK_44	86	100	93	85
240-162966-2	MW-211S_021922	89	101	93	88
240-162966-3	MW-35_021922	84	102	94	83
240-162966-4	MW-212S_021922	85	99	93	85
LCS 240-518646/5	Lab Control Sample	88	104	93	89
MB 240-518646/8	Method Blank	88	102	91	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-162966-2	MW-211S_021922	79
240-162966-3	MW-35_021922	79
240-162966-4	MW-212S_021922	80
240-162970-H-4 MS	Matrix Spike	79
240-162970-N-4 MSD	Matrix Spike Duplicate	79
LCS 240-518603/4	Lab Control Sample	79
MB 240-518603/5	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518646/8
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 11:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 11:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 11:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 11:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 11:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 11:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*02/24/22 11:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/24/22 11:42*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*02/24/22 11:42*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*02/24/22 11:42*	*1*

Lab Sample ID: LCS 240-518646/5
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	19.7		ug/L		98	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		93	77 - 123
Tetrachloroethene	20.0	18.3		ug/L		92	76 - 123
trans-1,2-Dichloroethene	20.0	18.0		ug/L		90	75 - 124
Trichloroethene	20.0	18.2		ug/L		91	70 - 122
Vinyl chloride	20.0	19.4		ug/L		97	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-162961-A-2 MS
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	20.0	17.8		ug/L		89	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124
Vinyl chloride	1.0	U	20.0	17.7		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-162961-A-2 MS
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Lab Sample ID: 240-162961-F-2 MSD
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		86	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.3		ug/L		92	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	17.0		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.0		ug/L		85	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	17.9		ug/L		90	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518603/5
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/23/22 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*02/23/22 20:58*	*1*

Lab Sample ID: LCS 240-518603/4
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.6		ug/L		106	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-H-4 MS
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153		

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-N-4 MSD
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

GC/MS VOA

Analysis Batch: 518603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162966-2	MW-211S_021922	Total/NA	Water	8260B SIM	
240-162966-3	MW-35_021922	Total/NA	Water	8260B SIM	
240-162966-4	MW-212S_021922	Total/NA	Water	8260B SIM	
MB 240-518603/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-518603/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-162970-H-4 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-162970-N-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 518646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162966-1	TRIP BLANK_44	Total/NA	Water	8260B	
240-162966-2	MW-211S_021922	Total/NA	Water	8260B	
240-162966-3	MW-35_021922	Total/NA	Water	8260B	
240-162966-4	MW-212S_021922	Total/NA	Water	8260B	
MB 240-518646/8	Method Blank	Total/NA	Water	8260B	
LCS 240-518646/5	Lab Control Sample	Total/NA	Water	8260B	
240-162961-A-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-162961-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Client Sample ID: TRIP BLANK_44
Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 16:32	TJL1	TAL CAN

Client Sample ID: MW-211S_021922
Date Collected: 02/19/22 10:15
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 16:55	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 01:53	CS	TAL CAN

Client Sample ID: MW-35_021922
Date Collected: 02/19/22 11:50
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 17:17	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 02:19	CS	TAL CAN

Client Sample ID: MW-212S_021922
Date Collected: 02/19/22 13:35
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162966-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 17:39	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 02:46	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162966-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.401.03	Shipping/Tracking No:			
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_44	—	—		X						2					N	G	X	X	X	X	X	X		1 Trip Blank
MW-21S_021922	2/19/22	10:15		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-35_021922	2/19/22	11:50		X						6					N	G	X	X	X	X	X	X	X	" "
MW-21S_021922	2/19/22	13:35		X						6					N	G	X	X	X	X	X	X	X	" "

clg 2/19/22

240-162966 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	2/19/22 14:30	Novi Cold Storage	Arcadis	2/19/22 14:30
Novi Cold Storage	Arcadis	2/22/22 1000		FEETA	2-22-22 1000
	FEETA	2-22-22 1400	Rachelle Harold	FEETNC	2-23-22 8:00

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 162966**
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hancock

Cooler Received on 2-23-22 Opened on 2-23-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-14 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC157842**
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 162966

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-14) IR-15	0.3	0.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	0.4	0.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-14 (IR-15)	1.3	1.1	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

February 28, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 162966-1
Sample date: 2022-02-19
Report received by CADENA: 2022-02-28
Initial Data Verification completed by CADENA: 2022-02-28
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 162966-1

		Sample Name:	TRIP BLANK_44				MW-211S_021922				MW-35_021922				MW-212S_021922			
		Lab Sample ID:	2401629661				2401629662				2401629663				2401629664			
		Sample Date:	2/19/2022				2/19/2022				2/19/2022				2/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260B																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.0	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.4	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260BBSim																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	3.5	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-162967-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
2/28/2022 3:48:27 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Job ID: 240-162967-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-162967-1

Comments
No additional comments.

Receipt
The samples were received on 2/23/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.1º C, 0.2º C and 1.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-162967-1	TRIP BLANK_41	Water	02/19/22 00:00	02/23/22 08:00
240-162967-2	MW-40_021922	Water	02/19/22 11:21	02/23/22 08:00
240-162967-3	MW-31_021922	Water	02/19/22 12:41	02/23/22 08:00
240-162967-4	MW-208S_021922	Water	02/19/22 14:11	02/23/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Client Sample ID: TRIP BLANK_41 — Lab Sample ID: 240-162967-1

No Detections.

Client Sample ID: MW-40_021922 — Lab Sample ID: 240-162967-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.2		1.0	0.46	ug/L	1		8260B	Total/NA

Client Sample ID: MW-31_021922 — Lab Sample ID: 240-162967-3

No Detections.

Client Sample ID: MW-208S_021922 — Lab Sample ID: 240-162967-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Client Sample ID: TRIP BLANK_41

Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162967-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 18:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 18:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*02/24/22 18:02*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*02/24/22 18:02*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*02/24/22 18:02*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*02/24/22 18:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Client Sample ID: MW-40_021922
Date Collected: 02/19/22 11:21
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162967-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/24/22 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*02/24/22 03:13*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 18:24	1
cis-1,2-Dichloroethene	**2.2**		1.0	0.46	ug/L			02/24/22 18:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 18:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 18:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 18:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*02/24/22 18:24*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*02/24/22 18:24*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*02/24/22 18:24*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*02/24/22 18:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Client Sample ID: MW-31_021922

Date Collected: 02/19/22 12:41
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162967-3

Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/24/22 05:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*02/24/22 05:00*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 18:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 18:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 18:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 18:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 18:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 18:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*02/24/22 18:46*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/24/22 18:46*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*02/24/22 18:46*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*02/24/22 18:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Client Sample ID: MW-208S_021922
Date Collected: 02/19/22 14:11
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162967-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/24/22 05:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*02/24/22 05:26*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 19:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 19:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*02/24/22 19:09*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/24/22 19:09*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*02/24/22 19:09*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*02/24/22 19:09*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-162961-A-2 MS	Matrix Spike	84	102	93	83
240-162961-F-2 MSD	Matrix Spike Duplicate	81	101	93	82
240-162967-1	TRIP BLANK_41	83	100	92	82
240-162967-2	MW-40_021922	87	101	93	84
240-162967-3	MW-31_021922	86	102	94	82
240-162967-4	MW-208S_021922	86	102	96	83
LCS 240-518646/5	Lab Control Sample	88	104	93	89
MB 240-518646/8	Method Blank	88	102	91	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-162967-2	MW-40_021922	81
240-162967-3	MW-31_021922	81
240-162967-4	MW-208S_021922	80
240-162970-H-4 MS	Matrix Spike	79
240-162970-N-4 MSD	Matrix Spike Duplicate	79
LCS 240-518603/4	Lab Control Sample	79
MB 240-518603/5	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518646/8
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/24/22 11:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/24/22 11:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 11:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/24/22 11:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/24/22 11:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/24/22 11:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*02/24/22 11:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*02/24/22 11:42*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*02/24/22 11:42*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*02/24/22 11:42*	*1*

Lab Sample ID: LCS 240-518646/5
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	19.7		ug/L		98	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		93	77 - 123
Tetrachloroethene	20.0	18.3		ug/L		92	76 - 123
trans-1,2-Dichloroethene	20.0	18.0		ug/L		90	75 - 124
Trichloroethene	20.0	18.2		ug/L		91	70 - 122
Vinyl chloride	20.0	19.4		ug/L		97	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-162961-A-2 MS
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	20.0	16.8		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	20.0	17.8		ug/L		89	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	16.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	20.0	16.4		ug/L		82	61 - 124
Vinyl chloride	1.0	U	20.0	17.7		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-162961-A-2 MS
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*83*		*73 - 120*

Lab Sample ID: 240-162961-F-2 MSD
Matrix: Water
Analysis Batch: 518646

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.3		ug/L		86	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	18.3		ug/L		92	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	17.0		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	20.0	17.0		ug/L		85	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	17.9		ug/L		90	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518603/5
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/23/22 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*02/23/22 20:58*	*1*

Lab Sample ID: LCS 240-518603/4
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-H-4 MS
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-N-4 MSD
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

GC/MS VOA

Analysis Batch: 518603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162967-2	MW-40_021922	Total/NA	Water	8260B SIM	
240-162967-3	MW-31_021922	Total/NA	Water	8260B SIM	
240-162967-4	MW-208S_021922	Total/NA	Water	8260B SIM	
MB 240-518603/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-518603/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-162970-H-4 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-162970-N-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 518646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162967-1	TRIP BLANK_41	Total/NA	Water	8260B	
240-162967-2	MW-40_021922	Total/NA	Water	8260B	
240-162967-3	MW-31_021922	Total/NA	Water	8260B	
240-162967-4	MW-208S_021922	Total/NA	Water	8260B	
MB 240-518646/8	Method Blank	Total/NA	Water	8260B	
LCS 240-518646/5	Lab Control Sample	Total/NA	Water	8260B	
240-162961-A-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-162961-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Client Sample ID: TRIP BLANK_41

Lab Sample ID: 240-162967-1
Matrix: Water
Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 18:02	TJL1	TAL CAN

Client Sample ID: MW-40_021922

Lab Sample ID: 240-162967-2
Matrix: Water
Date Collected: 02/19/22 11:21
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 18:24	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 03:13	CS	TAL CAN

Client Sample ID: MW-31_021922

Lab Sample ID: 240-162967-3
Matrix: Water
Date Collected: 02/19/22 12:41
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 18:46	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 05:00	CS	TAL CAN

Client Sample ID: MW-208S_021922

Lab Sample ID: 240-162967-4
Matrix: Water
Date Collected: 02/19/22 14:11
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518646	02/24/22 19:09	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 05:26	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-162967-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

MICHIGAN 190

TestAmerica

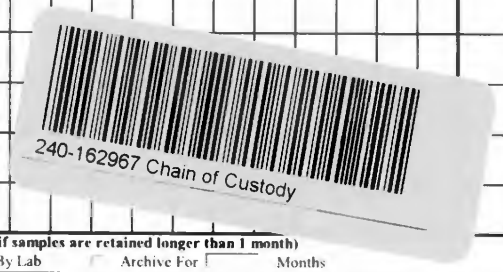
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_41	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-40-021922	02/19/22	11:21		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-31-021922	02/19/22	12:41		X						6					N	G	X	X	X	X	X	X	X	
MW-208S-021922	02/19/22	14:11		X						6					N	G	X	X	X	X	X	X	X	



Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Gary Schafer	Arcadis	2-21-22 805	Novi cold storage	Arcadis	2/21/22 805
Relinquished by: Novi cold storage	Company: Arcadis	Date/Time: 2/22/22 1000	Received by:	Company: EEETA	Date/Time: 2-22-22 1000
Relinquished by:	Company: 222-22 1400	Date/Time: EEETA	Received in Laboratory by: Rochelle Harrold	Company: EETNC	Date/Time: 2-23-22 800

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 162907**
Canton Facility

Client Arcadis Site Name Cooler unpacked by: Rachelle Hamlett
Cooler Received on 2-23-22 Opened on 2-23-22
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-14 (CF -0.2 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC157842
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 162967

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-14) IR-15	0.3	0.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	0.4	0.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	1.3	1.1	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice

DATA VERIFICATION REPORT

February 28, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 162967-1
Sample date: 2022-02-19
Report received by CADENA: 2022-02-28
Initial Data Verification completed by CADENA: 2022-02-28
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 162967-1

		Sample Name:	TRIP BLANK_41				MW-40_021922				MW-31_021922				MW-208S_021922			
		Lab Sample ID:	2401629671				2401629672				2401629673				2401629674			
		Sample Date:	2/19/2022				2/19/2022				2/19/2022				2/19/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260B																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	2.2	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260BBSim																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-162969-1
Client Project/Site: Ford LTP - On-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
2/28/2022 3:48:53 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Job ID: 240-162969-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-162969-1

Comments
No additional comments.

Receipt
The samples were received on 2/23/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.1º C, 0.2º C and 1.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-162969-1	TRIP BLANK_140	Water	02/19/22 00:00	02/23/22 08:00
240-162969-2	MW-210S_021922	Water	02/19/22 10:03	02/23/22 08:00
240-162969-3	MW-34_021922	Water	02/19/22 11:15	02/23/22 08:00
240-162969-4	MW-42_021922	Water	02/19/22 12:30	02/23/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Client Sample ID: TRIP BLANK_140 — Lab Sample ID: 240-162969-1

No Detections.

Client Sample ID: MW-210S_021922 — Lab Sample ID: 240-162969-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.97	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	13		1.0	0.46	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	1.8		1.0	0.51	ug/L	1		8260B	Total/NA
Vinyl chloride	4.9		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-34_021922 — Lab Sample ID: 240-162969-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.6		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	0.57	J	1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-42_021922 — Lab Sample ID: 240-162969-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.72	J	1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Client Sample ID: TRIP BLANK_140

Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162969-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 13:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 13:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 13:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 13:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 13:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*02/25/22 13:20*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*02/25/22 13:20*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*02/25/22 13:20*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*02/25/22 13:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Client Sample ID: MW-210S_021922
Date Collected: 02/19/22 10:03
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162969-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.97**	**J**	2.0	0.86	ug/L			02/24/22 05:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*02/24/22 05:53*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 15:40	1
cis-1,2-Dichloroethene	**13**		1.0	0.46	ug/L			02/25/22 15:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 15:40	1
trans-1,2-Dichloroethene	**1.8**		1.0	0.51	ug/L			02/25/22 15:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 15:40	1
Vinyl chloride	**4.9**		1.0	0.45	ug/L			02/25/22 15:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*02/25/22 15:40*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*02/25/22 15:40*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*02/25/22 15:40*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*02/25/22 15:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Client Sample ID: MW-34_021922
Date Collected: 02/19/22 11:15
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162969-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**3.6**		2.0	0.86	ug/L			02/24/22 06:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*02/24/22 06:20*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 16:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 16:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 16:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 16:04	1
Vinyl chloride	**0.57**	**J**	1.0	0.45	ug/L			02/25/22 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*02/25/22 16:04*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*02/25/22 16:04*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*02/25/22 16:04*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*02/25/22 16:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Client Sample ID: MW-42_021922
Date Collected: 02/19/22 12:30
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162969-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/24/22 06:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*02/24/22 06:46*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 16:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 16:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 16:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 16:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 16:27	1
Vinyl chloride	**0.72**	**J**	1.0	0.45	ug/L			02/25/22 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*02/25/22 16:27*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*02/25/22 16:27*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*02/25/22 16:27*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*02/25/22 16:27*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-162969-1	TRIP BLANK_140	92	95	99	106
240-162969-2	MW-210S_021922	90	91	92	101
240-162969-3	MW-34_021922	97	96	97	108
240-162969-4	MW-42_021922	104	101	101	113
240-162970-E-3 MS	Matrix Spike	99	111	110	108
240-162970-F-3 MSD	Matrix Spike Duplicate	104	111	114	112
LCS 240-518745/5	Lab Control Sample	98	108	113	111
MB 240-518745/7	Method Blank	100	104	109	111

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-162969-2	MW-210S_021922	82
240-162969-3	MW-34_021922	80
240-162969-4	MW-42_021922	84
240-162970-H-4 MS	Matrix Spike	79
240-162970-N-4 MSD	Matrix Spike Duplicate	79
LCS 240-518603/4	Lab Control Sample	79
MB 240-518603/5	Method Blank	78

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518745/7
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 12:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 12:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 12:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 12:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*02/25/22 12:33*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*02/25/22 12:33*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*02/25/22 12:33*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*02/25/22 12:33*	*1*

Lab Sample ID: LCS 240-518745/5
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	24.8		ug/L		99	63 - 134
cis-1,2-Dichloroethene	25.0	23.6		ug/L		95	77 - 123
Tetrachloroethene	25.0	26.0		ug/L		104	76 - 123
trans-1,2-Dichloroethene	25.0	24.7		ug/L		99	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	25.0	22.8		ug/L		91	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*113*		*78 - 122*
Dibromofluoromethane (Surr)	*111*		*73 - 120*

Lab Sample ID: 240-162970-E-3 MS
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	23.2		ug/L		93	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	1.0	U	25.0	21.2		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-162970-E-3 MS
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Lab Sample ID: 240-162970-F-3 MSD
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	23.5		ug/L		94	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	22.4		ug/L		90	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*
Toluene-d8 (Surr)	*114*		*78 - 122*
Dibromofluoromethane (Surr)	*112*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518603/5
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/23/22 20:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*02/23/22 20:58*	*1*

Lab Sample ID: LCS 240-518603/4
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-H-4 MS
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-162970-N-4 MSD
Matrix: Water
Analysis Batch: 518603

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153	3	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

GC/MS VOA

Analysis Batch: 518603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162969-2	MW-210S_021922	Total/NA	Water	8260B SIM	
240-162969-3	MW-34_021922	Total/NA	Water	8260B SIM	
240-162969-4	MW-42_021922	Total/NA	Water	8260B SIM	
MB 240-518603/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-518603/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-162970-H-4 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-162970-N-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 518745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162969-1	TRIP BLANK_140	Total/NA	Water	8260B	
240-162969-2	MW-210S_021922	Total/NA	Water	8260B	
240-162969-3	MW-34_021922	Total/NA	Water	8260B	
240-162969-4	MW-42_021922	Total/NA	Water	8260B	
MB 240-518745/7	Method Blank	Total/NA	Water	8260B	
LCS 240-518745/5	Lab Control Sample	Total/NA	Water	8260B	
240-162970-E-3 MS	Matrix Spike	Total/NA	Water	8260B	
240-162970-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Client Sample ID: TRIP BLANK_140

Lab Sample ID: 240-162969-1
Matrix: Water
Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518745	02/25/22 13:20	LEE	TAL CAN

Client Sample ID: MW-210S_021922

Lab Sample ID: 240-162969-2
Matrix: Water
Date Collected: 02/19/22 10:03
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518745	02/25/22 15:40	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 05:53	CS	TAL CAN

Client Sample ID: MW-34_021922

Lab Sample ID: 240-162969-3
Matrix: Water
Date Collected: 02/19/22 11:15
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518745	02/25/22 16:04	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 06:20	CS	TAL CAN

Client Sample ID: MW-42_021922

Lab Sample ID: 240-162969-4
Matrix: Water
Date Collected: 02/19/22 12:30
Date Received: 02/23/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518745	02/25/22 16:27	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	518603	02/24/22 06:46	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162969-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Dominic Hunn	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:	10 day		Job/SDG No:
Project Number: 30080642.401.03	Shipping/Tracking No:			
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_140	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2105-021422	02/14/22	1003		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-34-021422	02/14/22	1115		6						6					N	G	X	X	X	X	X	X	X	
MW-42-021422	02/14/22	1230		6						6					N	G	X	X	X	X	X	X	X	

240-162969 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments: Ons-Lk EAST

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728

Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	02/29/22 1545	Novi cold storage	Arcadis	02/21/22 1545
Relinquished by: Novi Cold Storage	Company: Arcadis	Date/Time: 2/22/22 1000	Received by:	Company: EETA	Date/Time: 2-22-22 1000
Relinquished by:	Company: EETA	Date/Time: 2-22-22 1400	Received in Laboratory by: Rachelle Hatch	Company: EETINC	Date/Time: 2-23-22 800

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 162969**
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hamelik

Cooler Received on 2-23-22 Opened on 2-23-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-14 (CF -0.2 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC157842
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 162969

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-14) IR-15	0.3	0.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	0.4	0.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	1.3	1.1	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice

DATA VERIFICATION REPORT

February 28, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 162969-1
Sample date: 2022-02-19
Report received by CADENA: 2022-02-28
Initial Data Verification completed by CADENA: 2022-02-28
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 162969-1

		Sample Name:	TRIP BLANK_140				MW-210S_021922				MW-34_021922				MW-42_021922			
		Lab Sample ID:	2401629691				2401629692				2401629693				2401629694			
		Sample Date:	2/19/2022				2/19/2022				2/19/2022				2/19/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260B																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	13	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	1.8	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	4.9	1.0	ug/l	---	0.57	1.0	ug/l	J	0.72	1.0	ug/l	J
	OSW-8260BBSim																	
	1,4-Dioxane	123-91-1					0.97	2.0	ug/l	J	3.6	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-162971-1
Client Project/Site: Ford LTP - On-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
3/9/2022 4:09:58 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Job ID: 240-162971-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-162971-1

Comments
No additional comments.

Receipt
The samples were received on 2/23/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.1º C, 0.2º C and 1.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-162971-1	TRIP BLANK_46	Water	02/19/22 00:00	02/23/22 08:00
240-162971-2	MW-213S_021922	Water	02/19/22 09:40	02/23/22 08:00
240-162971-3	MW-43_021922	Water	02/19/22 11:05	02/23/22 08:00
240-162971-4	MW-52_021922	Water	02/19/22 12:20	02/23/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Client Sample ID: TRIP BLANK_46 — Lab Sample ID: 240-162971-1

No Detections.

Client Sample ID: MW-213S_021922 — Lab Sample ID: 240-162971-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.48	J	1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-43_021922 — Lab Sample ID: 240-162971-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MW-52_021922 — Lab Sample ID: 240-162971-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Client Sample ID: TRIP BLANK_46

Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 14:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 14:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 14:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 14:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 14:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*02/25/22 14:07*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*02/25/22 14:07*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*02/25/22 14:07*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*02/25/22 14:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Client Sample ID: MW-213S_021922
Date Collected: 02/19/22 09:40
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/25/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*02/25/22 17:51*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 18:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 18:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 18:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 18:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 18:02	1
Vinyl chloride	**0.48**	**J**	1.0	0.45	ug/L			02/25/22 18:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*02/25/22 18:02*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*02/25/22 18:02*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*02/25/22 18:02*	*1*
Dibromofluoromethane (Surr)	*117*		*73 - 120*		*02/25/22 18:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Client Sample ID: MW-43_021922
Date Collected: 02/19/22 11:05
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			02/25/22 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*02/25/22 18:18*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/01/22 14:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/01/22 14:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/01/22 14:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/01/22 14:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/01/22 14:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/01/22 14:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*03/01/22 14:10*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*03/01/22 14:10*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*03/01/22 14:10*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*03/01/22 14:10*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Client Sample ID: MW-52_021922
Date Collected: 02/19/22 12:20
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/25/22 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*02/25/22 19:38*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 18:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 18:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 18:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 18:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 18:25	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			02/25/22 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*02/25/22 18:25*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*02/25/22 18:25*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*02/25/22 18:25*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*02/25/22 18:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-162970-E-3 MS	Matrix Spike	99	111	110	108
240-162970-F-3 MSD	Matrix Spike Duplicate	104	111	114	112
240-162971-1	TRIP BLANK_46	91	91	96	103
240-162971-2	MW-213S_021922	104	101	108	117
240-162971-3	MW-43_021922	94	96	100	109
240-162971-3 MS	MW-43-MS_021922	92	104	107	107
240-162971-3 MSD	MW-43-MSD_021922	98	109	110	111
240-162971-4	MW-52_021922	102	104	109	116
LCS 240-518745/5	Lab Control Sample	98	108	113	111
LCS 240-518935/5	Lab Control Sample	88	98	103	102
MB 240-518745/7	Method Blank	100	104	109	111
MB 240-518935/7	Method Blank	93	100	103	107

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-162971-2	MW-213S_021922	74
240-162971-3	MW-43_021922	74
240-162971-3 MS	MW-43-MS_021922	74
240-162971-3 MSD	MW-43-MSD_021922	75
240-162971-4	MW-52_021922	74
LCS 240-518807/4	Lab Control Sample	73
MB 240-518807/5	Method Blank	72

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518745/7
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 12:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 12:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 12:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 12:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 12:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 12:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*02/25/22 12:33*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*02/25/22 12:33*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*02/25/22 12:33*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*02/25/22 12:33*	*1*

Lab Sample ID: LCS 240-518745/5
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	24.8		ug/L		99	63 - 134
cis-1,2-Dichloroethene	25.0	23.6		ug/L		95	77 - 123
Tetrachloroethene	25.0	26.0		ug/L		104	76 - 123
trans-1,2-Dichloroethene	25.0	24.7		ug/L		99	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	25.0	22.8		ug/L		91	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*113*		*78 - 122*
Dibromofluoromethane (Surr)	*111*		*73 - 120*

Lab Sample ID: 240-162970-E-3 MS
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	23.2		ug/L		93	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	56 - 136
Trichloroethene	1.0	U	25.0	22.7		ug/L		91	61 - 124
Vinyl chloride	1.0	U	25.0	21.2		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-162970-E-3 MS
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	108		73 - 120

Lab Sample ID: 240-162970-F-3 MSD
Matrix: Water
Analysis Batch: 518745

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	23.5		ug/L		94	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	22.4		ug/L		90	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		62 - 137
4-Bromofluorobenzene (Surr)	111		56 - 136
Toluene-d8 (Surr)	114		78 - 122
Dibromofluoromethane (Surr)	112		73 - 120

Lab Sample ID: MB 240-518935/7
Matrix: Water
Analysis Batch: 518935

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/01/22 12:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/01/22 12:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/01/22 12:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/01/22 12:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/01/22 12:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/01/22 12:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		62 - 137		03/01/22 12:11	1
4-Bromofluorobenzene (Surr)	100		56 - 136		03/01/22 12:11	1
Toluene-d8 (Surr)	103		78 - 122		03/01/22 12:11	1
Dibromofluoromethane (Surr)	107		73 - 120		03/01/22 12:11	1

Lab Sample ID: LCS 240-518935/5
Matrix: Water
Analysis Batch: 518935

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	26.6		ug/L		106	63 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		99	77 - 123
Tetrachloroethene	25.0	24.9		ug/L		100	76 - 123
trans-1,2-Dichloroethene	25.0	24.9		ug/L		100	75 - 124
Trichloroethene	25.0	24.7		ug/L		99	70 - 122

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-518935/5
Matrix: Water
Analysis Batch: 518935

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl chloride			25.0	23.1		ug/L		92	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-162971-3 MS
Matrix: Water
Analysis Batch: 518935

Client Sample ID: MW-43-MS_021922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene	1.0	U	25.0	24.1		ug/L		96	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		89	66 - 128		
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	56 - 136		
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124		
Vinyl chloride	1.0	U	25.0	20.1		ug/L		80	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-162971-3 MSD
Matrix: Water
Analysis Batch: 518935

Client Sample ID: MW-43-MSD_021922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	25.4		ug/L		102	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.0		ug/L		92	66 - 128	3	14
Tetrachloroethene	1.0	U	25.0	24.5		ug/L		98	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		91	56 - 136	2	15
Trichloroethene	1.0	U	25.0	23.1		ug/L		92	61 - 124	2	15
Vinyl chloride	1.0	U	25.0	21.8		ug/L		87	43 - 157	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*111*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518807/5
Matrix: Water
Analysis Batch: 518807

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/25/22 16:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*02/25/22 16:31*	*1*

Lab Sample ID: LCS 240-518807/4
Matrix: Water
Analysis Batch: 518807

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*

Lab Sample ID: 240-162971-3 MS
Matrix: Water
Analysis Batch: 518807

Client Sample ID: MW-43-MS_021922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	2.2		10.0	13.0		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

Lab Sample ID: 240-162971-3 MSD
Matrix: Water
Analysis Batch: 518807

Client Sample ID: MW-43-MSD_021922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.2		10.0	12.4		ug/L		102	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

GC/MS VOA

Analysis Batch: 518745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162971-1	TRIP BLANK_46	Total/NA	Water	8260B	
240-162971-2	MW-213S_021922	Total/NA	Water	8260B	
240-162971-4	MW-52_021922	Total/NA	Water	8260B	
MB 240-518745/7	Method Blank	Total/NA	Water	8260B	
LCS 240-518745/5	Lab Control Sample	Total/NA	Water	8260B	
240-162970-E-3 MS	Matrix Spike	Total/NA	Water	8260B	
240-162970-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 518807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162971-2	MW-213S_021922	Total/NA	Water	8260B SIM	
240-162971-3	MW-43_021922	Total/NA	Water	8260B SIM	
240-162971-4	MW-52_021922	Total/NA	Water	8260B SIM	
MB 240-518807/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-518807/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-162971-3 MS	MW-43-MS_021922	Total/NA	Water	8260B SIM	
240-162971-3 MSD	MW-43-MSD_021922	Total/NA	Water	8260B SIM	

Analysis Batch: 518935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-162971-3	MW-43_021922	Total/NA	Water	8260B	
MB 240-518935/7	Method Blank	Total/NA	Water	8260B	
LCS 240-518935/5	Lab Control Sample	Total/NA	Water	8260B	
240-162971-3 MS	MW-43-MS_021922	Total/NA	Water	8260B	
240-162971-3 MSD	MW-43-MSD_021922	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Client Sample ID: TRIP BLANK_46
Date Collected: 02/19/22 00:00
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518745	02/25/22 14:07	LEE	TAL CAN

Client Sample ID: MW-213S_021922
Date Collected: 02/19/22 09:40
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518745	02/25/22 18:02	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/25/22 17:51	CS	TAL CAN

Client Sample ID: MW-43_021922
Date Collected: 02/19/22 11:05
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518935	03/01/22 14:10	SAM	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/25/22 18:18	CS	TAL CAN

Client Sample ID: MW-52_021922
Date Collected: 02/19/22 12:20
Date Received: 02/23/22 08:00

Lab Sample ID: 240-162971-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518745	02/25/22 18:25	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/25/22 19:38	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-162971-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

MICHIGAN TestAmerica 190
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton – 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Job/SDG No:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_ 4/6	2/19/22	—		X						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-21S_021922	2/19/22	940		X						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-43_021922		1105		X						6					N	G	X	X	X	X	X	X	X					
MW-47-MS_021922		1105		X						6					N	G	X	X	X	X	X	X	X					run MS/msd
MW-43-MSD_021922		1105		X						6					N	G	X	X	X	X	X	X	X					
MW-52_021922		1220		X						6					N	G	X	X	X	X	X	X	X					

240-162971 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com Cadena #E203728
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	2/19/22 1430	Novi cold storage	Arcadis	2/19/22 1330
Relinquished by: Novi cold storage	Company: Arcadis	Date/Time: 2/22/22 1000	Received by:	Company: EETA	Date/Time: 2-22-22 1000
Relinquished by:	Company: EETA	Date/Time: 2-22-22 MW6	Received in Laboratory by: Raechelle Hurst	Company: EETNC	Date/Time: 2-23-22 800

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 162971
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hamelik

Cooler Received on 2-23-22 Opened on 2-23-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-14 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC157842**
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 162971

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	(IR-14) IR-15	0.3	0.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	0.4	0.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	1.3	1.1	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice

DATA VERIFICATION REPORT

March 09, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 162971-1
Sample date: 2022-02-19
Report received by CADENA: 2022-03-09
Initial Data Verification completed by CADENA: 2022-03-09
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 162971-1

		Sample Name:	TRIP BLANK_46				MW-213S_021922				MW-43_021922				MW-52_021922			
		Lab Sample ID:	2401629711				2401629712				2401629713				2401629714			
		Sample Date:	2/19/2022				2/19/2022				2/19/2022				2/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260B																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.48	1.0	ug/l	J	ND	1.0	ug/l	---	1.5	1.0	ug/l	---
OSW-8260BBSim																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	2.2	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-163026-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
3/2/2022 7:20:56 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Job ID: 240-163026-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-163026-1

Comments
No additional comments.

Receipt
The samples were received on 2/24/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.2º C and 0.3º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163026-1	TRIP BLANK_57	Water	02/22/22 00:00	02/24/22 08:00
240-163026-2	PW-16-01_022122	Water	02/21/22 12:15	02/24/22 08:00
240-163026-3	MW-62_022122	Water	02/21/22 13:50	02/24/22 08:00
240-163026-4	MW-50_022122	Water	02/21/22 16:00	02/24/22 08:00
240-163026-5	MW-48R_022222	Water	02/22/22 11:30	02/24/22 08:00
240-163026-6	MW-63_022222	Water	02/22/22 13:10	02/24/22 08:00
240-163026-7	MW-67_022222	Water	02/22/22 15:20	02/24/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: TRIP BLANK_57 — Lab Sample ID: 240-163026-1

No Detections.

Client Sample ID: PW-16-01_022122 — Lab Sample ID: 240-163026-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	63		13	5.8	ug/L	12.5		8260B	Total/NA
trans-1,2-Dichloroethene	11	J	13	6.4	ug/L	12.5		8260B	Total/NA
Vinyl chloride	600		13	5.6	ug/L	12.5		8260B	Total/NA

Client Sample ID: MW-62_022122 — Lab Sample ID: 240-163026-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.7	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MW-50_022122 — Lab Sample ID: 240-163026-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.6		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	32		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-48R_022222 — Lab Sample ID: 240-163026-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	9.3		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	2.1		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-63_022222 — Lab Sample ID: 240-163026-6

No Detections.

Client Sample ID: MW-67_022222 — Lab Sample ID: 240-163026-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.1		1.0	0.46	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.72	J	1.0	0.51	ug/L	1		8260B	Total/NA
Trichloroethene	60		1.0	0.44	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: TRIP BLANK_57

Date Collected: 02/22/22 00:00
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 15:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 15:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 15:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 15:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 15:30	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*62 - 137*		*02/25/22 15:30*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*02/25/22 15:30*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*02/25/22 15:30*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*02/25/22 15:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: PW-16-01_022122
Date Collected: 02/21/22 12:15
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/25/22 22:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*02/25/22 22:45*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			02/28/22 15:40	12.5
cis-1,2-Dichloroethene	**63**		13	5.8	ug/L			02/28/22 15:40	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			02/28/22 15:40	12.5
trans-1,2-Dichloroethene	**11**	**J**	13	6.4	ug/L			02/28/22 15:40	12.5
Trichloroethene	13	U	13	5.5	ug/L			02/28/22 15:40	12.5
Vinyl chloride	**600**		13	5.6	ug/L			02/28/22 15:40	12.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*62 - 137*		*02/28/22 15:40*	*12.5*
4-Bromofluorobenzene (Surr)	*113*		*56 - 136*		*02/28/22 15:40*	*12.5*
Toluene-d8 (Surr)	*88*		*78 - 122*		*02/28/22 15:40*	*12.5*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*02/28/22 15:40*	*12.5*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: MW-62_022122
Date Collected: 02/21/22 13:50
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			02/25/22 23:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*02/25/22 23:12*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 16:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 16:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 16:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 16:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 16:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*62 - 137*		*02/25/22 16:18*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*02/25/22 16:18*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*02/25/22 16:18*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*02/25/22 16:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: MW-50_022122
Date Collected: 02/21/22 16:00
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/26/22 00:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*02/26/22 00:32*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 17:30	1
cis-1,2-Dichloroethene	**4.6**		1.0	0.46	ug/L			02/25/22 17:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 17:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 17:30	1
Vinyl chloride	**32**		1.0	0.45	ug/L			02/25/22 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*62 - 137*		*02/25/22 17:30*	*1*
4-Bromofluorobenzene (Surr)	*112*		*56 - 136*		*02/25/22 17:30*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*02/25/22 17:30*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*02/25/22 17:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: MW-48R_022222

Date Collected: 02/22/22 11:30
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-5

Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	9.3		2.0	0.86	ug/L			02/26/22 00:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*02/26/22 00:58*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 17:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 17:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 17:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 17:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 17:54	1
Vinyl chloride	2.1		1.0	0.45	ug/L			02/25/22 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*62 - 137*		*02/25/22 17:54*	*1*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*		*02/25/22 17:54*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*02/25/22 17:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*02/25/22 17:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: MW-63_022222
Date Collected: 02/22/22 13:10
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-6
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/26/22 01:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*02/26/22 01:25*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 18:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 18:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 18:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 18:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 18:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*62 - 137*		*02/25/22 18:18*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*02/25/22 18:18*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*02/25/22 18:18*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*02/25/22 18:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: MW-67_022222
Date Collected: 02/22/22 15:20
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-7
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/26/22 01:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*02/26/22 01:52*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 18:42	1
cis-1,2-Dichloroethene	**3.1**		1.0	0.46	ug/L			02/25/22 18:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 18:42	1
trans-1,2-Dichloroethene	**0.72**	**J**	1.0	0.51	ug/L			02/25/22 18:42	1
Trichloroethene	**60**		1.0	0.44	ug/L			02/25/22 18:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*62 - 137*		*02/25/22 18:42*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*02/25/22 18:42*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*02/25/22 18:42*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*02/25/22 18:42*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-163026-1	TRIP BLANK_57	72	110	90	87
240-163026-2	PW-16-01_022122	76	113	88	92
240-163026-2 MS	PW-16-01_022122	82	121	90	95
240-163026-2 MSD	PW-16-01_022122	78	118	86	89
240-163026-3	MW-62_022122	76	109	90	85
240-163026-3 MS	MW-62-MS_022122	75	117	93	90
240-163026-3 MSD	MW-62-MSD_022122	68	111	90	83
240-163026-4	MW-50_022122	76	112	92	88
240-163026-5	MW-48R_022222	76	118	93	90
240-163026-6	MW-63_022222	73	111	90	88
240-163026-7	MW-67_022222	76	106	89	89
LCS 240-518760/5	Lab Control Sample	75	118	90	87
LCS 240-518866/5	Lab Control Sample	74	118	88	89
MB 240-518760/8	Method Blank	74	113	87	85
MB 240-518866/8	Method Blank	75	111	85	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-162971-H-3 MS	Matrix Spike	74
240-162971-N-3 MSD	Matrix Spike Duplicate	75
240-163026-2	PW-16-01_022122	75
240-163026-3	MW-62_022122	73
240-163026-3 MS	MW-62-MS_022122	75
240-163026-3 MSD	MW-62-MSD_022122	77
240-163026-4	MW-50_022122	76
240-163026-5	MW-48R_022222	76
240-163026-6	MW-63_022222	76
240-163026-7	MW-67_022222	74
LCS 240-518807/4	Lab Control Sample	73
MB 240-518807/5	Method Blank	72

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518760/8
Matrix: Water
Analysis Batch: 518760

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/25/22 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/25/22 13:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/25/22 13:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/25/22 13:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/25/22 13:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*62 - 137*		*02/25/22 13:36*	*1*
4-Bromofluorobenzene (Surr)	*113*		*56 - 136*		*02/25/22 13:36*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*02/25/22 13:36*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*02/25/22 13:36*	*1*

Lab Sample ID: LCS 240-518760/5
Matrix: Water
Analysis Batch: 518760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	19.4		ug/L		97	63 - 134
cis-1,2-Dichloroethene	20.0	19.7		ug/L		99	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	19.8		ug/L		99	75 - 124
Trichloroethene	20.0	20.3		ug/L		101	70 - 122
Vinyl chloride	20.0	22.3		ug/L		112	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*62 - 137*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Lab Sample ID: 240-163026-3 MS
Matrix: Water
Analysis Batch: 518760

Client Sample ID: MW-62-MS_022122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	25.0	19.3		ug/L		77	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	19.4		ug/L		77	66 - 128
Tetrachloroethene	1.0	U	25.0	19.5		ug/L		78	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	20.9		ug/L		84	61 - 124
Vinyl chloride	1.0	U	25.0	24.1		ug/L		96	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*62 - 137*
4-Bromofluorobenzene (Surr)	*117*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-163026-3 MS
Matrix: Water
Analysis Batch: 518760

Client Sample ID: MW-62-MS_022122
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: 240-163026-3 MSD
Matrix: Water
Analysis Batch: 518760

Client Sample ID: MW-62-MSD_022122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.6		ug/L		83	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	7	14
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.5		ug/L		82	56 - 136	1	15
Trichloroethene	1.0	U	25.0	21.9		ug/L		87	61 - 124	4	15
Vinyl chloride	1.0	U	25.0	24.8		ug/L		99	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	68		62 - 137
4-Bromofluorobenzene (Surr)	111		56 - 136
Toluene-d8 (Surr)	90		78 - 122
Dibromofluoromethane (Surr)	83		73 - 120

Lab Sample ID: MB 240-518866/8
Matrix: Water
Analysis Batch: 518866

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			02/28/22 14:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			02/28/22 14:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 14:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			02/28/22 14:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			02/28/22 14:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			02/28/22 14:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	75		62 - 137		02/28/22 14:02	1
4-Bromofluorobenzene (Surr)	111		56 - 136		02/28/22 14:02	1
Toluene-d8 (Surr)	85		78 - 122		02/28/22 14:02	1
Dibromofluoromethane (Surr)	88		73 - 120		02/28/22 14:02	1

Lab Sample ID: LCS 240-518866/5
Matrix: Water
Analysis Batch: 518866

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	22.6		ug/L		113	63 - 134
cis-1,2-Dichloroethene	20.0	21.6		ug/L		108	77 - 123
Tetrachloroethene	20.0	19.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	22.5		ug/L		113	75 - 124
Trichloroethene	20.0	21.9		ug/L		109	70 - 122

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-518866/5
Matrix: Water
Analysis Batch: 518866

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl chloride			20.0	22.9		ug/L		114	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*74*		*62 - 137*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*
Toluene-d8 (Surr)	*88*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Lab Sample ID: 240-163026-2 MS
Matrix: Water
Analysis Batch: 518866

Client Sample ID: PW-16-01_022122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene	13	U	250	283		ug/L		113	56 - 135		
cis-1,2-Dichloroethene	63		250	337		ug/L		110	66 - 128		
Tetrachloroethene	13	U	250	249		ug/L		99	62 - 131		
trans-1,2-Dichloroethene	11	J	250	290		ug/L		112	56 - 136		
Trichloroethene	13	U	250	282		ug/L		113	61 - 124		
Vinyl chloride	600		250	857	E	ug/L		102	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*121*		*56 - 136*
Toluene-d8 (Surr)	*90*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-163026-2 MSD
Matrix: Water
Analysis Batch: 518866

Client Sample ID: PW-16-01_022122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	262		ug/L		105	56 - 135	8	26
cis-1,2-Dichloroethene	63		250	326		ug/L		105	66 - 128	3	14
Tetrachloroethene	13	U	250	227		ug/L		91	62 - 131	9	20
trans-1,2-Dichloroethene	11	J	250	273		ug/L		105	56 - 136	6	15
Trichloroethene	13	U	250	254		ug/L		102	61 - 124	10	15
Vinyl chloride	600		250	843	E	ug/L		97	43 - 157	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*62 - 137*
4-Bromofluorobenzene (Surr)	*118*		*56 - 136*
Toluene-d8 (Surr)	*86*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-518807/5
Matrix: Water
Analysis Batch: 518807

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/25/22 16:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*02/25/22 16:31*	*1*

Lab Sample ID: LCS 240-518807/4
Matrix: Water
Analysis Batch: 518807

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.2		ug/L		102	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*

Lab Sample ID: 240-162971-H-3 MS
Matrix: Water
Analysis Batch: 518807

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	2.2		10.0	13.0		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

Lab Sample ID: 240-162971-N-3 MSD
Matrix: Water
Analysis Batch: 518807

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.2		10.0	12.4		ug/L		102	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-163026-3 MS
Matrix: Water
Analysis Batch: 518807

Client Sample ID: MW-62-MS_022122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	1.7	J	10.0	12.5		ug/L		109	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-163026-3 MSD
Matrix: Water
Analysis Batch: 518807

Client Sample ID: MW-62-MSD_022122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	1.7	J	10.0	12.7		ug/L		110	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

GC/MS VOA

Analysis Batch: 518760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163026-1	TRIP BLANK_57	Total/NA	Water	8260B	
240-163026-3	MW-62_022122	Total/NA	Water	8260B	
240-163026-4	MW-50_022122	Total/NA	Water	8260B	
240-163026-5	MW-48R_022222	Total/NA	Water	8260B	
240-163026-6	MW-63_022222	Total/NA	Water	8260B	
240-163026-7	MW-67_022222	Total/NA	Water	8260B	
MB 240-518760/8	Method Blank	Total/NA	Water	8260B	
LCS 240-518760/5	Lab Control Sample	Total/NA	Water	8260B	
240-163026-3 MS	MW-62-MS_022122	Total/NA	Water	8260B	
240-163026-3 MSD	MW-62-MSD_022122	Total/NA	Water	8260B	

Analysis Batch: 518807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163026-2	PW-16-01_022122	Total/NA	Water	8260B SIM	
240-163026-3	MW-62_022122	Total/NA	Water	8260B SIM	
240-163026-4	MW-50_022122	Total/NA	Water	8260B SIM	
240-163026-5	MW-48R_022222	Total/NA	Water	8260B SIM	
240-163026-6	MW-63_022222	Total/NA	Water	8260B SIM	
240-163026-7	MW-67_022222	Total/NA	Water	8260B SIM	
MB 240-518807/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-518807/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-162971-H-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-162971-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	
240-163026-3 MS	MW-62-MS_022122	Total/NA	Water	8260B SIM	
240-163026-3 MSD	MW-62-MSD_022122	Total/NA	Water	8260B SIM	

Analysis Batch: 518866

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163026-2	PW-16-01_022122	Total/NA	Water	8260B	
MB 240-518866/8	Method Blank	Total/NA	Water	8260B	
LCS 240-518866/5	Lab Control Sample	Total/NA	Water	8260B	
240-163026-2 MS	PW-16-01_022122	Total/NA	Water	8260B	
240-163026-2 MSD	PW-16-01_022122	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: TRIP BLANK_57
Lab Sample ID: 240-163026-1
Date Collected: 02/22/22 00:00
Matrix: Water
Date Received: 02/24/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518760	02/25/22 15:30	HMB	TAL CAN

Client Sample ID: PW-16-01_022122
Lab Sample ID: 240-163026-2
Date Collected: 02/21/22 12:15
Matrix: Water
Date Received: 02/24/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		12.5	518866	02/28/22 15:40	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/25/22 22:45	CS	TAL CAN

Client Sample ID: MW-62_022122
Lab Sample ID: 240-163026-3
Date Collected: 02/21/22 13:50
Matrix: Water
Date Received: 02/24/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518760	02/25/22 16:18	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/25/22 23:12	CS	TAL CAN

Client Sample ID: MW-50_022122
Lab Sample ID: 240-163026-4
Date Collected: 02/21/22 16:00
Matrix: Water
Date Received: 02/24/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518760	02/25/22 17:30	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/26/22 00:32	CS	TAL CAN

Client Sample ID: MW-48R_022222
Lab Sample ID: 240-163026-5
Date Collected: 02/22/22 11:30
Matrix: Water
Date Received: 02/24/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518760	02/25/22 17:54	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/26/22 00:58	CS	TAL CAN

Client Sample ID: MW-63_022222
Lab Sample ID: 240-163026-6
Date Collected: 02/22/22 13:10
Matrix: Water
Date Received: 02/24/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518760	02/25/22 18:18	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/26/22 01:25	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Client Sample ID: MW-67_022222
Date Collected: 02/22/22 15:20
Date Received: 02/24/22 08:00

Lab Sample ID: 240-163026-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	518760	02/25/22 18:42	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	518807	02/26/22 01:52	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163026-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	12-21-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

MICHIGAN 190

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hinkle	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 57_	2/22/22	—	X	X						1					N	G	X	X	X	X	X	X		1 Trip Blank
PW-16-01_022122	2/21/22	12:15		X						6					N	G	X	X	X	X	X	X		3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-62_022122	2/21/22	13:50		X						6					N	G	X	X	X	X	X	X		" "
MW-62-MS_022122	2/21/22	13:58		X						6					N	G	X	X	X	X	X	X		RUN MS/MSD
MW-62-MSD_022122	2/21/22	13:55		X						6					N	G	X	X	X	X	X	X		RUN MS/MSD
~~MW-50_02~~																								
MW-50_022122	2/21/22	16:08		X						6					N	G	X	X	X	X	X	X		3 VOAs for 8260B 3 VOAs for B260B SIM
MW-48_022222	2/22/22	11:30		X						6					N	G	X	X	X	X	X	X		" "
MW-63_022222	2/22/22	13:10		X						6					N	G	X	X	X	X	X	X		" "
MW-67_022222	2/22/22	15:20		X						6					N	G	X	X	X	X	X	X		" "

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hinkle	ARCADIS	2/22/22 16:20	NOVI COLD STORAGE	ARCADIS	2/22/22 16:20
NOVI COLD STORAGE	Arcadis	2/23/22 1010		EE-TH	2-23-22 1010
	Eurofins	2-23-22 1300	Adam Gamett	ETNC	2-24-22 0800

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240-163026 Chain of Custody

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Adam Garrett

Cooler Received on 2-24-22 Opened on 2-24-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 7A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-14 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	N
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC157842**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042019	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-14) IR-15	0.5	0.3	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	0.4	0.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice Blue Ice Dry Ice Water None
			☐	See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: DW NPDES RCRA Other

Client Contact	Client Project Manager: Kate Hinker	Site Contact: John McClafferty	Lab Contact: Mike Deistentin	TestAmerica Laboratories, Inc.
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-644-5131	Telephone: 330-497-9396	
Address: 28550 Cabot Drive, Suite 500	Email: katherine.hinker@arcadis.com	Analysis Turnaround Time		
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hinds	TAT if different from below: 10 day	1 weeks / 2 weeks / 1 week / 2 days / 1 day	
Phone: 248-994-2240	Method of Shipment/Carrier:			
Project Name: Ford LTP On-Site	Shipping/Tracking No:			
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Analyses

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_57_	2/22/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
PW-16-01_022122	2/21/22	12:15		X						6					N	G	X	X	X	X	X	X		3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-62_022122	2/21/22	13:50		X						6					N	G	X	X	X	X	X	X		" "
MW-02-MS_022122	2/21/22	13:58		X						6					N	G	X	X	X	X	X	X		RUN MS/MSD
MW-02-MSD_022122	2/21/22	13:55		X						6					N	G	X	X	X	X	X	X		RUN MS/MSD
~~MW-50-02~~																								
MW-50_022122	2/21/22	16:00		X						6					N	G	X	X	X	X	X	X		3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-48_022222	2/22/22	11:30		X						6					N	G	X	X	X	X	X	X		" "
MW-63_022222	2/22/22	13:10		X						6					N	G	X	X	X	X	X	X		" "
MW-67_022222	2/22/22	15:20		X						6					N	G	X	X	X	X	X	X		" "

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Calscience at ftomeda@calscience.com. Calscience #E201721

Level IV Reporting requested

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Samantha Hinds	ARCADIS	2/22/22 16:20	NOVI COLD STORAGE	ARCADIS	2/22/22 16:20
Relinquished by: Novi Cold Storage	Company: Arcadis	Date/Time: 2/23/22 1010	Received by:	Company: EFTI	Date/Time: 2-23-22 1012
Relinquished by	Company	Date/Time	Received in Laboratory by:	Company	Date/Time

DATA VERIFICATION REPORT

March 02, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 163026-1
Sample date: 2022-02-22 2022-02-21
Report received by CADENA: 2022-03-02
Initial Data Verification completed by CADENA: 2022-03-02
Number of Samples:7
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 163026-1

		Sample Name:	TRIP BLANK_57				PW-16-01_022122				MW-62_022122				MW-50_022122				MW-48R_022222				MW-63_022222				MW-67_022222			
		Lab Sample ID:	2401630261				2401630262				2401630263				2401630264				2401630265				2401630266				2401630267			
		Sample Date:	2/22/2022				2/21/2022				2/21/2022				2/21/2022				2/22/2022				2/22/2022				2/22/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																														
OSW-8260B																														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	63	13	ug/l	---	ND	1.0	ug/l	---	4.6	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.1	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	11	13	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.72	1.0	ug/l	J
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	60	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	600	13	ug/l	---	ND	1.0	ug/l	---	32	1.0	ug/l	---	2.1	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260BBSim																														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	1.7	2.0	ug/l	J	ND	2.0	ug/l	---	9.3	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-163172-1
Client Project/Site: Ford LTP - On-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
3/16/2022 3:01:05 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Job ID: 240-163172-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-163172-1

Comments
No additional comments.

Receipt
The samples were received on 3/2/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.2º C and 3.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163172-1	TRIP BLANK_26	Water	02/23/22 00:00	03/02/22 08:00
240-163172-2	MW-46_022322	Water	02/23/22 16:20	03/02/22 08:00
240-163172-3	MW-47_022322	Water	02/23/22 13:25	03/02/22 08:00
240-163172-4	MW-68_022322	Water	02/23/22 11:45	03/02/22 08:00
240-163172-5	MW-70_022422	Water	02/24/22 11:55	03/02/22 08:00
240-163172-6	MW-45_022422	Water	02/24/22 13:30	03/02/22 08:00
240-163172-7	DUP-03	Water	02/24/22 00:00	03/02/22 08:00
240-163172-8	MW-58_022422	Water	02/24/22 15:52	03/02/22 08:00
240-163172-9	MW-219S_022522	Water	02/25/22 11:55	03/02/22 08:00
240-163172-10	MW-25_022522	Water	02/25/22 15:06	03/02/22 08:00
240-163172-11	TRIP BLANK_125	Water	02/25/22 00:00	03/02/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: TRIP BLANK_26 — Lab Sample ID: 240-163172-1

No Detections.

Client Sample ID: MW-46_022322 — Lab Sample ID: 240-163172-2

No Detections.

Client Sample ID: MW-47_022322 — Lab Sample ID: 240-163172-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.69	J	1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	0.76	J	1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-68_022322 — Lab Sample ID: 240-163172-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	32		1.0	0.46	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	4.9		1.0	0.51	ug/L	1		8260B	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-70_022422 — Lab Sample ID: 240-163172-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	190		13	5.8	ug/L	12.5		8260B	Total/NA
Vinyl chloride	400		13	5.6	ug/L	12.5		8260B	Total/NA

Client Sample ID: MW-45_022422 — Lab Sample ID: 240-163172-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	76		13	5.8	ug/L	12.5		8260B	Total/NA
Vinyl chloride	410		13	5.6	ug/L	12.5		8260B	Total/NA

Client Sample ID: DUP-03 — Lab Sample ID: 240-163172-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	77		13	5.8	ug/L	12.5		8260B	Total/NA
Vinyl chloride	400		13	5.6	ug/L	12.5		8260B	Total/NA

Client Sample ID: MW-58_022422 — Lab Sample ID: 240-163172-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.5		2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MW-219S_022522 — Lab Sample ID: 240-163172-9

No Detections.

Client Sample ID: MW-25_022522 — Lab Sample ID: 240-163172-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: TRIP BLANK_125 — Lab Sample ID: 240-163172-11

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: TRIP BLANK_26

Date Collected: 02/23/22 00:00
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 16:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/03/22 16:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 16:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 16:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 16:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/03/22 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*03/03/22 16:40*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*03/03/22 16:40*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*03/03/22 16:40*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*03/03/22 16:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-46_022322
Date Collected: 02/23/22 16:20
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/04/22 23:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*03/04/22 23:35*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 17:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/03/22 17:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 17:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 17:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 17:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/03/22 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*03/03/22 17:05*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*03/03/22 17:05*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*03/03/22 17:05*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*03/03/22 17:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-47_022322
Date Collected: 02/23/22 13:25
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/04/22 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*03/04/22 23:59*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 17:30	1
cis-1,2-Dichloroethene	**0.69**	**J**	1.0	0.46	ug/L			03/03/22 17:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 17:30	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 17:30	1
Vinyl chloride	**0.76**	**J**	1.0	0.45	ug/L			03/03/22 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*03/03/22 17:30*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*03/03/22 17:30*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/03/22 17:30*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*03/03/22 17:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-68_022322
Date Collected: 02/23/22 11:45
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/05/22 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*03/05/22 00:24*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 17:55	1
cis-1,2-Dichloroethene	**32**		1.0	0.46	ug/L			03/03/22 17:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 17:55	1
trans-1,2-Dichloroethene	**4.9**		1.0	0.51	ug/L			03/03/22 17:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 17:55	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			03/03/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*03/03/22 17:55*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*03/03/22 17:55*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/03/22 17:55*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*03/03/22 17:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-70_022422
Date Collected: 02/24/22 11:55
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-5
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.4**	**J**	2.0	0.86	ug/L			03/05/22 00:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*03/05/22 00:49*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			03/03/22 18:20	12.5
cis-1,2-Dichloroethene	**190**		13	5.8	ug/L			03/03/22 18:20	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			03/03/22 18:20	12.5
trans-1,2-Dichloroethene	13	U	13	6.4	ug/L			03/03/22 18:20	12.5
Trichloroethene	13	U	13	5.5	ug/L			03/03/22 18:20	12.5
Vinyl chloride	**400**		13	5.6	ug/L			03/03/22 18:20	12.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*03/03/22 18:20*	*12.5*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*03/03/22 18:20*	*12.5*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/03/22 18:20*	*12.5*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*03/03/22 18:20*	*12.5*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-45_022422
Date Collected: 02/24/22 13:30
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-6
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/05/22 01:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*03/05/22 01:14*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			03/03/22 18:45	12.5
cis-1,2-Dichloroethene	**76**		13	5.8	ug/L			03/03/22 18:45	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			03/03/22 18:45	12.5
trans-1,2-Dichloroethene	13	U	13	6.4	ug/L			03/03/22 18:45	12.5
Trichloroethene	13	U	13	5.5	ug/L			03/03/22 18:45	12.5
Vinyl chloride	**410**		13	5.6	ug/L			03/03/22 18:45	12.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*03/03/22 18:45*	*12.5*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*03/03/22 18:45*	*12.5*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/03/22 18:45*	*12.5*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*03/03/22 18:45*	*12.5*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: DUP-03
Date Collected: 02/24/22 00:00
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-7
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/05/22 01:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*03/05/22 01:39*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			03/03/22 19:10	12.5
cis-1,2-Dichloroethene	**77**		13	5.8	ug/L			03/03/22 19:10	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			03/03/22 19:10	12.5
trans-1,2-Dichloroethene	13	U	13	6.4	ug/L			03/03/22 19:10	12.5
Trichloroethene	13	U	13	5.5	ug/L			03/03/22 19:10	12.5
Vinyl chloride	**400**		13	5.6	ug/L			03/03/22 19:10	12.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*03/03/22 19:10*	*12.5*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*03/03/22 19:10*	*12.5*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/03/22 19:10*	*12.5*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*03/03/22 19:10*	*12.5*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-58_022422
Date Collected: 02/24/22 15:52
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-8
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.5		2.0	0.86	ug/L			03/05/22 02:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*03/05/22 02:04*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 19:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/03/22 19:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 19:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 19:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 19:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/03/22 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*03/03/22 19:35*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*03/03/22 19:35*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/03/22 19:35*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*03/03/22 19:35*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-219S_022522
Date Collected: 02/25/22 11:55
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-9
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/04/22 21:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*03/04/22 21:30*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 20:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/03/22 20:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 20:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 20:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 20:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/03/22 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*03/03/22 20:00*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*03/03/22 20:00*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/03/22 20:00*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*03/03/22 20:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: MW-25_022522
Date Collected: 02/25/22 15:06
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-10
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			03/09/22 02:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*03/09/22 02:48*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 21:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/03/22 21:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 21:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 21:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 21:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/03/22 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*03/03/22 21:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*03/03/22 21:16*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*03/03/22 21:16*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*03/03/22 21:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: TRIP BLANK_125
Date Collected: 02/25/22 00:00
Date Received: 03/02/22 08:00

Lab Sample ID: 240-163172-11
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 16:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/03/22 16:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 16:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 16:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 16:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/03/22 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*03/03/22 16:15*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*03/03/22 16:15*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*03/03/22 16:15*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*03/03/22 16:15*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-163172-1	TRIP BLANK_26	91	101	101	105
240-163172-2	MW-46_022322	94	104	103	109
240-163172-3	MW-47_022322	91	102	102	108
240-163172-4	MW-68_022322	93	101	102	111
240-163172-5	MW-70_022422	92	101	102	106
240-163172-6	MW-45_022422	94	100	102	106
240-163172-7	DUP-03	94	100	102	106
240-163172-8	MW-58_022422	93	102	102	105
240-163172-9	MW-219S_022522	92	102	102	104
240-163172-9 MS	MW-219S-MS_022522	84	100	104	95
240-163172-9 MSD	MW-219S-MSD_022522	83	101	104	95
240-163172-10	MW-25_022522	91	99	99	103
240-163172-11	TRIP BLANK_125	92	103	103	106
LCS 240-519064/6	Lab Control Sample	85	99	102	98
LCSD 240-519064/9	Lab Control Sample Dup	86	104	105	98
MB 240-519064/10	Method Blank	95	103	103	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-163172-2	MW-46_022322	83
240-163172-3	MW-47_022322	79
240-163172-4	MW-68_022322	77
240-163172-5	MW-70_022422	81
240-163172-6	MW-45_022422	80
240-163172-7	DUP-03	79
240-163172-8	MW-58_022422	78
240-163172-9	MW-219S_022522	79
240-163172-9 MS	MW-219S-MS_022522	80
240-163172-9 MSD	MW-219S-MSD_022522	79
240-163172-10	MW-25_022522	80
240-163307-G-3 MS	Matrix Spike	82
240-163307-M-3 MSD	Matrix Spike Duplicate	82
LCS 240-519224/5	Lab Control Sample	79
LCS 240-519472/4	Lab Control Sample	80
MB 240-519224/6	Method Blank	79
MB 240-519472/5	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519064/10
Matrix: Water
Analysis Batch: 519064

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/03/22 12:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/03/22 12:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 12:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/03/22 12:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/03/22 12:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/03/22 12:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*03/03/22 12:55*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*03/03/22 12:55*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*03/03/22 12:55*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*03/03/22 12:55*	*1*

Lab Sample ID: LCS 240-519064/6
Matrix: Water
Analysis Batch: 519064

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	25.3		ug/L		126	63 - 134
cis-1,2-Dichloroethene	20.0	21.8		ug/L		109	77 - 123
Tetrachloroethene	20.0	19.9		ug/L		99	76 - 123
trans-1,2-Dichloroethene	20.0	23.1		ug/L		116	75 - 124
Trichloroethene	20.0	20.9		ug/L		105	70 - 122
Vinyl chloride	20.0	22.1		ug/L		110	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: LCSD 240-519064/9
Matrix: Water
Analysis Batch: 519064

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	20.0	23.5		ug/L		117	63 - 134	7	35
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123	9	35
Tetrachloroethene	20.0	17.6		ug/L		88	76 - 123	12	35
trans-1,2-Dichloroethene	20.0	20.7		ug/L		104	75 - 124	11	35
Trichloroethene	20.0	18.9		ug/L		95	70 - 122	10	35
Vinyl chloride	20.0	20.8		ug/L		104	60 - 144	6	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 240-519064/9
Matrix: Water
Analysis Batch: 519064

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-163172-9 MS
Matrix: Water
Analysis Batch: 519064

Client Sample ID: MW-219S-MS_022522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	20.0	20.4		ug/L		102	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	20.0	16.2		ug/L		81	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	56 - 136
Trichloroethene	1.0	U	20.0	16.7		ug/L		84	61 - 124
Vinyl chloride	1.0	U	20.0	15.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-163172-9 MSD
Matrix: Water
Analysis Batch: 519064

Client Sample ID: MW-219S-MSD_022522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	21.4		ug/L		107	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.8		ug/L		94	66 - 128	8	14
Tetrachloroethene	1.0	U	20.0	17.6		ug/L		88	62 - 131	9	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 136	7	15
Trichloroethene	1.0	U	20.0	18.1		ug/L		90	61 - 124	8	15
Vinyl chloride	1.0	U	20.0	16.0		ug/L		80	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519224/6
Matrix: Water
Analysis Batch: 519224

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/04/22 16:28	1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-519224/6
Matrix: Water
Analysis Batch: 519224

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		66 - 120		03/04/22 16:28	1

Lab Sample ID: LCS 240-519224/5
Matrix: Water
Analysis Batch: 519224

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		66 - 120

Lab Sample ID: 240-163172-9 MS
Matrix: Water
Analysis Batch: 519224

Client Sample ID: MW-219S-MS_022522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		66 - 120

Lab Sample ID: 240-163172-9 MSD
Matrix: Water
Analysis Batch: 519224

Client Sample ID: MW-219S-MSD_022522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	79		66 - 120

Lab Sample ID: MB 240-519472/5
Matrix: Water
Analysis Batch: 519472

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/08/22 22:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		03/08/22 22:14	1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-519472/4
Matrix: Water
Analysis Batch: 519472

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	9.05		ug/L		90	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-163307-G-3 MS
Matrix: Water
Analysis Batch: 519472

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-163307-M-3 MSD
Matrix: Water
Analysis Batch: 519472

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

GC/MS VOA

Analysis Batch: 519064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163172-1	TRIP BLANK_26	Total/NA	Water	8260B	
240-163172-2	MW-46_022322	Total/NA	Water	8260B	
240-163172-3	MW-47_022322	Total/NA	Water	8260B	
240-163172-4	MW-68_022322	Total/NA	Water	8260B	
240-163172-5	MW-70_022422	Total/NA	Water	8260B	
240-163172-6	MW-45_022422	Total/NA	Water	8260B	
240-163172-7	DUP-03	Total/NA	Water	8260B	
240-163172-8	MW-58_022422	Total/NA	Water	8260B	
240-163172-9	MW-219S_022522	Total/NA	Water	8260B	
240-163172-10	MW-25_022522	Total/NA	Water	8260B	
240-163172-11	TRIP BLANK_125	Total/NA	Water	8260B	
MB 240-519064/10	Method Blank	Total/NA	Water	8260B	
LCS 240-519064/6	Lab Control Sample	Total/NA	Water	8260B	
LCSD 240-519064/9	Lab Control Sample Dup	Total/NA	Water	8260B	
240-163172-9 MS	MW-219S-MS_022522	Total/NA	Water	8260B	
240-163172-9 MSD	MW-219S-MSD_022522	Total/NA	Water	8260B	

Analysis Batch: 519224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163172-2	MW-46_022322	Total/NA	Water	8260B SIM	
240-163172-3	MW-47_022322	Total/NA	Water	8260B SIM	
240-163172-4	MW-68_022322	Total/NA	Water	8260B SIM	
240-163172-5	MW-70_022422	Total/NA	Water	8260B SIM	
240-163172-6	MW-45_022422	Total/NA	Water	8260B SIM	
240-163172-7	DUP-03	Total/NA	Water	8260B SIM	
240-163172-8	MW-58_022422	Total/NA	Water	8260B SIM	
240-163172-9	MW-219S_022522	Total/NA	Water	8260B SIM	
MB 240-519224/6	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519224/5	Lab Control Sample	Total/NA	Water	8260B SIM	
240-163172-9 MS	MW-219S-MS_022522	Total/NA	Water	8260B SIM	
240-163172-9 MSD	MW-219S-MSD_022522	Total/NA	Water	8260B SIM	

Analysis Batch: 519472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163172-10	MW-25_022522	Total/NA	Water	8260B SIM	
MB 240-519472/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519472/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-163307-G-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-163307-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: TRIP BLANK_26
Lab Sample ID: 240-163172-1
Date Collected: 02/23/22 00:00
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 16:40	HMB	TAL CAN

Client Sample ID: MW-46_022322
Lab Sample ID: 240-163172-2
Date Collected: 02/23/22 16:20
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 17:05	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/04/22 23:35	CS	TAL CAN

Client Sample ID: MW-47_022322
Lab Sample ID: 240-163172-3
Date Collected: 02/23/22 13:25
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 17:30	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/04/22 23:59	CS	TAL CAN

Client Sample ID: MW-68_022322
Lab Sample ID: 240-163172-4
Date Collected: 02/23/22 11:45
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 17:55	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/05/22 00:24	CS	TAL CAN

Client Sample ID: MW-70_022422
Lab Sample ID: 240-163172-5
Date Collected: 02/24/22 11:55
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		12.5	519064	03/03/22 18:20	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/05/22 00:49	CS	TAL CAN

Client Sample ID: MW-45_022422
Lab Sample ID: 240-163172-6
Date Collected: 02/24/22 13:30
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		12.5	519064	03/03/22 18:45	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/05/22 01:14	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Client Sample ID: DUP-03
Lab Sample ID: 240-163172-7
Date Collected: 02/24/22 00:00
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		12.5	519064	03/03/22 19:10	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/05/22 01:39	CS	TAL CAN

Client Sample ID: MW-58_022422
Lab Sample ID: 240-163172-8
Date Collected: 02/24/22 15:52
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 19:35	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/05/22 02:04	CS	TAL CAN

Client Sample ID: MW-219S_022522
Lab Sample ID: 240-163172-9
Date Collected: 02/25/22 11:55
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 20:00	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519224	03/04/22 21:30	CS	TAL CAN

Client Sample ID: MW-25_022522
Lab Sample ID: 240-163172-10
Date Collected: 02/25/22 15:06
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 21:16	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	519472	03/09/22 02:48	CS	TAL CAN

Client Sample ID: TRIP BLANK_125
Lab Sample ID: 240-163172-11
Date Collected: 02/25/22 00:00
Matrix: Water
Date Received: 03/02/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519064	03/03/22 16:15	HMB	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163172-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	1 of 2 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hindle	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_26	—	—		X						1					N	C	X	X	X	X	X	X		1 Trip Blank
MW-46_022322	2/23/22	16:20		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-47_022322	2/23/22	13:25		X						6					N	G	X	X	X	X	X	X	X	" "
MW-68_022322	2/23/22	11:45		X						6					N	G	X	X	X	X	X	X	X	" "
MW-70_022422	2/24/22	11:55		X						6					N	G	X	X	X	X	X	X	X	" "
MW-45_022422	2/24/22	13:30		X						6					N	G	X	X	X	X	X	X	X	" "
DUP-03 AH 3/1/22	2/24/22	—		X						6					N	G	X	X	X	X	X	X	X	" "
MW-58_022422	2/24/22	15:52		X						6					N	G	X	X	X	X	X	X	X	" "
MW-219S_022522	2/25/22	11:55		X						6					N	G	X	X	X	X	X	X	X	" "
MW-219S-MS_022522	2/25/22	11:56		X						6					N	G	X	X	X	X	X	X	X	RMN MS/MSD

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindle	ARCADIS	2/25/22 16:20	NOVI COD STORAGE	ARCADIS	2/25/22 16:20
[illegible]	Arcadis	3/1/22 1540	[illegible]	EETA	3/1/22
[illegible]	EETA	3/1/22	[illegible]	EETNC	3-2-22 800

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240-163172 Chain of Custody

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	2 of 2 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hindle	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_125	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-219S-MSD_022522	2/25/22	11:59		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B MW-219S-MSD 3 VOAs for 8260B SIM
MW-25_022522	2/25/22	15:06		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindle	ARCADIS	2/25/22 16:20	NOVI COD STORAGE	ARCADIS	2/25/22 16:20
[illegible]	ARCADIS	3/1/22 1540	[illegible]	EETA	3/1/22
[illegible]	EETA	3/1/22	Received in Laboratory by: [illegible]	EETNC	3-2-22 800

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Vanny Royce

Cooler Received on 3-2-22 Opened on 3-2-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 7A Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-14 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp.__Y__°C RH 3/7/22
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# **HC157842**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 60358	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 163172

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-14 IR-15	3.9	3.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	3.4	3.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	

DATA VERIFICATION REPORT

March 17, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 163172-1
Sample date: 2022-02-24 2022-02-25 2022-02-23
Report received by CADENA: 2022-03-17
Initial Data Verification completed by CADENA: 2022-03-17
Number of Samples:11
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, LCS/LCD RPD, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 163172-1

	Sample Name:	TRIP BLANK_26				MW-25_022522				TRIP BLANK_125				MW-46_022322				MW-47_022322				MW-68_022322				MW-70_022422				MW-45_022422				DUP-03				MW-58_022422				MW-219S_022522			
	Lab Sample ID:	2401631721				2401631721O				2401631721				2401631722				2401631723				2401631724				2401631725				2401631726				2401631727				2401631728				2401631729			
	Sample Date:	2/23/2022				2/25/2022				2/25/2022				2/23/2022				2/23/2022				2/23/2022				2/24/2022				2/24/2022				2/24/2022				2/24/2022				2/25/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																																												
OSW-8260B																																												
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.69	1.0	ug/l	J	32	1.0	ug/l	---	190	13	ug/l	---	76	13	ug/l	---	77	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	4.9	1.0	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.76	1.0	ug/l	J	1.2	1.0	ug/l	---	400	13	ug/l	---	410	13	ug/l	---	400	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260BSim																																												
1,4-Dioxane	123-91-1					1.4	2.0	ug/l	J					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	1.4	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---	4.5	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-163307-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
3/18/2022 10:19:48 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Job ID: 240-163307-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-163307-1

Comments
No additional comments.

Receipt
The samples were received on 3/4/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6º C, 2.2º C and 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163307-1	TRIP BLANK-116	Water	03/01/22 00:00	03/04/22 08:00
240-163307-2	MW-32_030122	Water	03/01/22 10:15	03/04/22 08:00
240-163307-3	MW-218S_030122	Water	03/01/22 11:10	03/04/22 08:00
240-163307-4	MW-39_030122	Water	03/01/22 13:00	03/04/22 08:00
240-163307-5	MW-33_030122	Water	03/01/22 14:10	03/04/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Client Sample ID: TRIP BLANK-116 — Lab Sample ID: 240-163307-1

No Detections.

Client Sample ID: MW-32_030122 — Lab Sample ID: 240-163307-2

No Detections.

Client Sample ID: MW-218S_030122 — Lab Sample ID: 240-163307-3

No Detections.

Client Sample ID: MW-39_030122 — Lab Sample ID: 240-163307-4

No Detections.

Client Sample ID: MW-33_030122 — Lab Sample ID: 240-163307-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Client Sample ID: TRIP BLANK-116
Date Collected: 03/01/22 00:00
Date Received: 03/04/22 08:00

Lab Sample ID: 240-163307-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/22 19:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/22 19:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 19:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/22 19:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 19:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/22 19:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*03/08/22 19:22*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*03/08/22 19:22*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*03/08/22 19:22*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*03/08/22 19:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Client Sample ID: MW-32_030122
Date Collected: 03/01/22 10:15
Date Received: 03/04/22 08:00

Lab Sample ID: 240-163307-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/08/22 03:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*03/08/22 03:03*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/22 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/22 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/22 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/22 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*03/08/22 19:47*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*03/08/22 19:47*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*03/08/22 19:47*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*03/08/22 19:47*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Client Sample ID: MW-218S_030122

Lab Sample ID: 240-163307-3

Date Collected: 03/01/22 11:10

Matrix: Water

Date Received: 03/04/22 08:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 01:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*03/09/22 01:09*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/22 20:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/22 20:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 20:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/22 20:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 20:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/22 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*03/08/22 20:12*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*03/08/22 20:12*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*03/08/22 20:12*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*03/08/22 20:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Client Sample ID: MW-39_030122
Date Collected: 03/01/22 13:00
Date Received: 03/04/22 08:00

Lab Sample ID: 240-163307-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/08/22 03:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*03/08/22 03:28*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/22 21:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/22 21:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 21:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/22 21:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 21:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/22 21:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*03/08/22 21:27*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*03/08/22 21:27*	*1*
Toluene-d8 (Surr)	*79*		*78 - 122*		*03/08/22 21:27*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*03/08/22 21:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Client Sample ID: MW-33_030122

Date Collected: 03/01/22 14:10
Date Received: 03/04/22 08:00

Lab Sample ID: 240-163307-5

Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/08/22 03:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*03/08/22 03:52*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/09/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/09/22 13:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/09/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/09/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/09/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/09/22 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*03/09/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*03/09/22 13:37*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*03/09/22 13:37*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*03/09/22 13:37*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-163296-E-16 MSD	Matrix Spike Duplicate	81	81	80	81
240-163296-H-16 MS	Matrix Spike	80	81	78	79
240-163307-1	TRIP BLANK-116	87	82	80	83
240-163307-2	MW-32_030122	87	80	80	82
240-163307-3	MW-218S_030122	83	79	80	80
240-163307-3 MS	MW-218S-MS_030122	83	86	80	81
240-163307-3 MSD	MW-218S-MSD_030122	82	83	80	83
240-163307-4	MW-39_030122	84	80	79	80
240-163307-5	MW-33_030122	87	79	80	80
LCS 240-519397/5	Lab Control Sample	87	85	80	83
LCS 240-519500/5	Lab Control Sample	82	78	80	82
MB 240-519397/10	Method Blank	86	81	81	84
MB 240-519397/8	Method Blank	91	81	79	83
MB 240-519500/8	Method Blank	84	78	81	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-163304-G-4 MS	Matrix Spike	77
240-163304-M-4 MSD	Matrix Spike Duplicate	81
240-163307-2	MW-32_030122	77
240-163307-3	MW-218S_030122	79
240-163307-3 MS	MW-218S-MS_030122	82
240-163307-3 MSD	MW-218S-MSD_030122	82
240-163307-4	MW-39_030122	81
240-163307-5	MW-33_030122	78
LCS 240-519341/4	Lab Control Sample	80
LCS 240-519472/4	Lab Control Sample	80
MB 240-519341/5	Method Blank	80
MB 240-519472/5	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519397/10
Matrix: Water
Analysis Batch: 519397

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/22 14:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/22 14:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 14:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/22 14:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 14:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/22 14:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*03/08/22 14:22*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*03/08/22 14:22*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*03/08/22 14:22*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*03/08/22 14:22*	*1*

Lab Sample ID: MB 240-519397/8
Matrix: Water
Analysis Batch: 519397

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/22 13:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/22 13:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 13:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/22 13:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/22 13:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/22 13:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*03/08/22 13:32*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*03/08/22 13:32*	*1*
Toluene-d8 (Surr)	*79*		*78 - 122*		*03/08/22 13:32*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*03/08/22 13:32*	*1*

Lab Sample ID: LCS 240-519397/5
Matrix: Water
Analysis Batch: 519397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene			20.0	20.1		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			20.0	18.6		ug/L		93	77 - 123		
Tetrachloroethene			20.0	18.6		ug/L		93	76 - 123		
trans-1,2-Dichloroethene			20.0	18.1		ug/L		90	75 - 124		
Trichloroethene			20.0	18.7		ug/L		93	70 - 122		
Vinyl chloride			20.0	20.8		ug/L		104	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*
Toluene-d8 (Surr)	*80*		*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-519397/5
Matrix: Water
Analysis Batch: 519397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	83		73 - 120

Lab Sample ID: 240-163307-3 MS
Matrix: Water
Analysis Batch: 519397

Client Sample ID: MW-218S-MS_030122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	20.0	19.5		ug/L		98	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	66 - 128
Tetrachloroethene	1.0	U	20.0	17.7		ug/L		88	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		89	56 - 136
Trichloroethene	1.0	U	20.0	18.6		ug/L		93	61 - 124
Vinyl chloride	1.0	U	20.0	20.3		ug/L		102	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		62 - 137
4-Bromofluorobenzene (Surr)	86		56 - 136
Toluene-d8 (Surr)	80		78 - 122
Dibromofluoromethane (Surr)	81		73 - 120

Lab Sample ID: 240-163307-3 MSD
Matrix: Water
Analysis Batch: 519397

Client Sample ID: MW-218S-MSD_030122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	18.0		ug/L		90	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 136	4	15
Trichloroethene	1.0	U	20.0	19.5		ug/L		97	61 - 124	4	15
Vinyl chloride	1.0	U	20.0	20.3		ug/L		101	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	82		62 - 137
4-Bromofluorobenzene (Surr)	83		56 - 136
Toluene-d8 (Surr)	80		78 - 122
Dibromofluoromethane (Surr)	83		73 - 120

Lab Sample ID: MB 240-519500/8
Matrix: Water
Analysis Batch: 519500

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/09/22 12:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/09/22 12:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/09/22 12:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/09/22 12:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/09/22 12:22	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-519500/8
Matrix: Water
Analysis Batch: 519500

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/09/22 12:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*03/09/22 12:22*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*03/09/22 12:22*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*03/09/22 12:22*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*03/09/22 12:22*	*1*

Lab Sample ID: LCS 240-519500/5
Matrix: Water
Analysis Batch: 519500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene			20.0	20.1		ug/L		100	63 - 134		
cis-1,2-Dichloroethene			20.0	19.1		ug/L		95	77 - 123		
Tetrachloroethene			20.0	18.8		ug/L		94	76 - 123		
trans-1,2-Dichloroethene			20.0	18.6		ug/L		93	75 - 124		
Trichloroethene			20.0	19.8		ug/L		99	70 - 122		
Vinyl chloride			20.0	19.7		ug/L		99	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*
Toluene-d8 (Surr)	*80*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Lab Sample ID: 240-163296-E-16 MSD
Matrix: Water
Analysis Batch: 519500

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	3.3	U F1	66.6	32.2	F1	ug/L		48	56 - 135	6	26
cis-1,2-Dichloroethene	3.3	U F1	66.6	32.4	F1	ug/L		49	66 - 128	7	14
Tetrachloroethene	3.3	U F1	66.6	28.2	F1	ug/L		42	62 - 131	2	20
trans-1,2-Dichloroethene	3.3	U F1	66.6	28.1	F1	ug/L		42	56 - 136	3	15
Trichloroethene	97	F1	66.6	99.5	F1	ug/L		3	61 - 124	3	15
Vinyl chloride	3.3	U F1	66.6	32.3		ug/L		49	43 - 157	15	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*
Toluene-d8 (Surr)	*80*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-163296-H-16 MS
Matrix: Water
Analysis Batch: 519500

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	3.3	U F1	66.6	30.2	F1	ug/L		45	56 - 135
cis-1,2-Dichloroethene	3.3	U F1	66.6	30.3	F1	ug/L		46	66 - 128
Tetrachloroethene	3.3	U F1	66.6	27.5	F1	ug/L		41	62 - 131
trans-1,2-Dichloroethene	3.3	U F1	66.6	27.3	F1	ug/L		41	56 - 136
Trichloroethene	97	F1	66.6	102	F1	ug/L		7	61 - 124
Vinyl chloride	3.3	U F1	66.6	27.7	F1	ug/L		42	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*62 - 137*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*
Toluene-d8 (Surr)	*78*		*78 - 122*
Dibromofluoromethane (Surr)	*79*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519341/5
Matrix: Water
Analysis Batch: 519341

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/07/22 18:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*03/07/22 18:28*	*1*

Lab Sample ID: LCS 240-519341/4
Matrix: Water
Analysis Batch: 519341

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane			10.0	9.77		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-163304-G-4 MS
Matrix: Water
Analysis Batch: 519341

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-163304-M-4 MSD
Matrix: Water
Analysis Batch: 519341

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: MB 240-519472/5
Matrix: Water
Analysis Batch: 519472

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/08/22 22:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*03/08/22 22:14*	*1*

Lab Sample ID: LCS 240-519472/4
Matrix: Water
Analysis Batch: 519472

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	9.05		ug/L		90	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-163307-3 MS
Matrix: Water
Analysis Batch: 519472

Client Sample ID: MW-218S-MS_030122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-163307-3 MSD
Matrix: Water
Analysis Batch: 519472

Client Sample ID: MW-218S-MSD_030122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

GC/MS VOA

Analysis Batch: 519341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163307-2	MW-32_030122	Total/NA	Water	8260B SIM	
240-163307-4	MW-39_030122	Total/NA	Water	8260B SIM	
240-163307-5	MW-33_030122	Total/NA	Water	8260B SIM	
MB 240-519341/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519341/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-163304-G-4 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-163304-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 519397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163307-1	TRIP BLANK-116	Total/NA	Water	8260B	
240-163307-2	MW-32_030122	Total/NA	Water	8260B	
240-163307-3	MW-218S_030122	Total/NA	Water	8260B	
240-163307-4	MW-39_030122	Total/NA	Water	8260B	
MB 240-519397/10	Method Blank	Total/NA	Water	8260B	
MB 240-519397/8	Method Blank	Total/NA	Water	8260B	
LCS 240-519397/5	Lab Control Sample	Total/NA	Water	8260B	
240-163307-3 MS	MW-218S-MS_030122	Total/NA	Water	8260B	
240-163307-3 MSD	MW-218S-MSD_030122	Total/NA	Water	8260B	

Analysis Batch: 519472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163307-3	MW-218S_030122	Total/NA	Water	8260B SIM	
MB 240-519472/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519472/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-163307-3 MS	MW-218S-MS_030122	Total/NA	Water	8260B SIM	
240-163307-3 MSD	MW-218S-MSD_030122	Total/NA	Water	8260B SIM	

Analysis Batch: 519500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163307-5	MW-33_030122	Total/NA	Water	8260B	
MB 240-519500/8	Method Blank	Total/NA	Water	8260B	
LCS 240-519500/5	Lab Control Sample	Total/NA	Water	8260B	
240-163296-E-16 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-163296-H-16 MS	Matrix Spike	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Client Sample ID: TRIP BLANK-116
Lab Sample ID: 240-163307-1
Date Collected: 03/01/22 00:00
Matrix: Water
Date Received: 03/04/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519397	03/08/22 19:22	LEE	TAL CAN

Client Sample ID: MW-32_030122
Lab Sample ID: 240-163307-2
Date Collected: 03/01/22 10:15
Matrix: Water
Date Received: 03/04/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519397	03/08/22 19:47	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	519341	03/08/22 03:03	CS	TAL CAN

Client Sample ID: MW-218S_030122
Lab Sample ID: 240-163307-3
Date Collected: 03/01/22 11:10
Matrix: Water
Date Received: 03/04/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519397	03/08/22 20:12	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	519472	03/09/22 01:09	CS	TAL CAN

Client Sample ID: MW-39_030122
Lab Sample ID: 240-163307-4
Date Collected: 03/01/22 13:00
Matrix: Water
Date Received: 03/04/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519397	03/08/22 21:27	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	519341	03/08/22 03:28	CS	TAL CAN

Client Sample ID: MW-33_030122
Lab Sample ID: 240-163307-5
Date Collected: 03/01/22 14:10
Matrix: Water
Date Received: 03/04/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519500	03/09/22 13:37	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	519341	03/08/22 03:52	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163307-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Dominic Harmon	TAT if different from below: 10 day ✓ 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier			Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No.			Job/SDG No
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions
TRIP BLANK_116	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-32_030122	3/1/22	1015		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-2185_030122	3/1/22	1110		6						6					N	G	X	X	X	X	X	X	X	
MW-39_030122	3/1/22	1300		6						6					N	G	X	X	X	X	X	X	X	
MW-33_030122	3/1/22	1410 ~~1300~~		6						6					N	G	X	X	X	X	X	X	X	
MW-2185-MS_030122	3/1/22	1110		6						6					N	G	X	X	X	X	X	X	X	run MS/MSD
MW-2185-MSD_030122	3/1/22	1110		6						6					N	G	X	X	X	X	X	X	X	run MS/MSD

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assess): Return to Client; ✓ Disposal

240-163307 Chain of Custody

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com Cadena #E203728
Level IV Reporting requested

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
	Arcadis	3/1/22 1510	Novi Cold Storage	Arcadis	3/1/22 1510
	Arcadis	3/3/22 1315		EETA	3 3 22 1316
	EETA	3 3 22 1354	Received in Laboratory by:	EETNC	3-4-22 900

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3/18/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 163307
Canton Facility

Client Arcadis Site Name

Cooler Received on 3-4-22 Opened on 3-4-22

Cooler unpacked by: Adam Garrett

FedEx. 1st Grd Exp UPS FAS ~~Clipper~~ Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # T4 ~~Foam Box~~ Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-14 (CF **-0.2** °C) Observed Cooler Temp. °C Corrected Cooler Temp °C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp °C Corrected Cooler Temp °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ~~Yes~~ No
   -Were the seals on the outside of the cooler(s) signed & dated? ~~Yes~~ No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes ~~No~~
   -Were tamper/custody seals intact and uncompromised? ~~Yes~~ No NA
3. Shippers' packing slip attached to the cooler(s)? ~~Yes~~ No
4. Did custody papers accompany the sample(s)? ~~Yes~~ No
5. Were the custody papers relinquished & signed in the appropriate place? ~~Yes~~ No
6. Was/were the person(s) who collected the samples clearly identified on the COC? ~~Yes~~ No
7. Did all bottles arrive in good condition (Unbroken)? ~~Yes~~ No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? ~~Yes~~ No
9. For each sample, does the COC specify preservatives (~~Y~~/N), # of containers (~~Y~~/N), and sample type of grab/comp (~~Y~~/N)? ~~Yes~~ No
10. Were correct bottle(s) used for the test(s) indicated? ~~Yes~~ No
11. Sufficient quantity received to perform indicated analyses? ~~Yes~~ No
12. Are these work share samples and all listed on the COC? Yes ~~No~~
    If yes, Questions 13-17 have been checked at the originating laboratory
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No ~~NA~~ pH Strip Lot# **HC157842**
14. Were VOAs on the COC? ~~Yes~~ No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes ~~No~~ NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420 16 ~~Yes~~ No
17. Was a LL Hg or Me Hg trip blank present? Yes ~~No~~

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired
Sample(s) were received in a broken container
Sample(s) were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory
Time preserved Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen

WI-NC-099

Login # : 163307

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-14) IR-15	3.0	2.8	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-14 (IR-15)	1.8	1.6	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-14) IR-15	2.4	2.2	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15			Wet Ice

DATA VERIFICATION REPORT

March 18, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 163307-1
Sample date: 2022-03-01
Report received by CADENA: 2022-03-18
Initial Data Verification completed by CADENA: 2022-03-18
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 163307-1

	Sample Name:	TRIP BLANK-116				MW-32_030122				MW-218S_030122				MW-39_030122				MW-33_030122			
	Lab Sample ID:	2401633071				2401633072				2401633073				2401633074				2401633075			
	Sample Date:	3/1/2022				3/1/2022				3/1/2022				3/1/2022				3/1/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260B																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260BBSim																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-163383-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
3/22/2022 9:26:43 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Job ID: 240-163383-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-163383-1

Comments
No additional comments.

Receipt
The samples were received on 3/8/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8º C and 1.3º C.

GC/MS VOA
Method 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-519589.

Method 8260B SIM: The matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-519570 was above calibration range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163383-1	TRIP BLANK_117	Water	03/03/22 00:00	03/08/22 09:50
240-163383-2	MW-222S_030322	Water	03/03/22 09:20	03/08/22 09:50
240-163383-3	MW-37_030322	Water	03/03/22 12:25	03/08/22 09:50
240-163383-4	MW-38_030322	Water	03/03/22 10:35	03/08/22 09:50
240-163383-5	MW-01_030322	Water	03/03/22 14:20	03/08/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Client Sample ID: TRIP BLANK_117 — Lab Sample ID: 240-163383-1

No Detections.

Client Sample ID: MW-222S_030322 — Lab Sample ID: 240-163383-2

No Detections.

Client Sample ID: MW-37_030322 — Lab Sample ID: 240-163383-3

No Detections.

Client Sample ID: MW-38_030322 — Lab Sample ID: 240-163383-4

No Detections.

Client Sample ID: MW-01_030322 — Lab Sample ID: 240-163383-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Client Sample ID: TRIP BLANK_117

Lab Sample ID: 240-163383-1

Date Collected: 03/03/22 00:00

Matrix: Water

Date Received: 03/08/22 09:50

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 17:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 17:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 17:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 17:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 17:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 17:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*03/10/22 17:50*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*03/10/22 17:50*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*03/10/22 17:50*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*03/10/22 17:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Client Sample ID: MW-222S_030322
Date Collected: 03/03/22 09:20
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163383-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 20:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*03/09/22 20:31*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 18:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 18:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 18:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*03/10/22 18:12*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*03/10/22 18:12*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*03/10/22 18:12*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*03/10/22 18:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Client Sample ID: MW-37_030322
Date Collected: 03/03/22 12:25
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163383-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*03/09/22 20:55*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 18:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 18:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 18:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*03/10/22 18:35*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*03/10/22 18:35*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*03/10/22 18:35*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*03/10/22 18:35*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Client Sample ID: MW-38_030322

Date Collected: 03/03/22 10:35
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163383-4

Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 21:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*03/09/22 21:19*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 18:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 18:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 18:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*03/10/22 18:57*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*03/10/22 18:57*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*03/10/22 18:57*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*03/10/22 18:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Client Sample ID: MW-01_030322
Date Collected: 03/03/22 14:20
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163383-5
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 21:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*03/09/22 21:43*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 19:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 19:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 19:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 19:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 19:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 19:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*03/10/22 19:19*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*03/10/22 19:19*	*1*
Toluene-d8 (Surr)	*86*		*78 - 122*		*03/10/22 19:19*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*03/10/22 19:19*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-163383-1	TRIP BLANK_117	98	94	92	91
240-163383-2	MW-222S_030322	95	89	87	87
240-163383-3	MW-37_030322	98	91	89	88
240-163383-4	MW-38_030322	100	93	91	90
240-163383-5	MW-01_030322	95	91	86	87
LCS 240-519589/5	Lab Control Sample	92	92	89	88
MB 240-519589/8	Method Blank	98	94	90	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-163383-2	MW-222S_030322	82
240-163383-3	MW-37_030322	83
240-163383-4	MW-38_030322	82
240-163383-5	MW-01_030322	85
LCS 240-519570/4	Lab Control Sample	81
MB 240-519570/5	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519589/8
Matrix: Water
Analysis Batch: 519589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 12:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 12:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 12:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 12:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 12:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 12:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*03/10/22 12:17*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*03/10/22 12:17*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*03/10/22 12:17*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*03/10/22 12:17*	*1*

Lab Sample ID: LCS 240-519589/5
Matrix: Water
Analysis Batch: 519589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	22.3		ug/L		111	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	20.1		ug/L		100	76 - 123
trans-1,2-Dichloroethene	20.0	21.0		ug/L		105	75 - 124
Trichloroethene	20.0	19.5		ug/L		97	70 - 122
Vinyl chloride	20.0	19.7		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*89*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519570/5
Matrix: Water
Analysis Batch: 519570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 19:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*03/09/22 19:19*	*1*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-519570/4
Matrix: Water
Analysis Batch: 519570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.8		ug/L		108	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

GC/MS VOA

Analysis Batch: 519570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163383-2	MW-222S_030322	Total/NA	Water	8260B SIM	
240-163383-3	MW-37_030322	Total/NA	Water	8260B SIM	
240-163383-4	MW-38_030322	Total/NA	Water	8260B SIM	
240-163383-5	MW-01_030322	Total/NA	Water	8260B SIM	
MB 240-519570/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519570/4	Lab Control Sample	Total/NA	Water	8260B SIM	

Analysis Batch: 519589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163383-1	TRIP BLANK_117	Total/NA	Water	8260B	
240-163383-2	MW-222S_030322	Total/NA	Water	8260B	
240-163383-3	MW-37_030322	Total/NA	Water	8260B	
240-163383-4	MW-38_030322	Total/NA	Water	8260B	
240-163383-5	MW-01_030322	Total/NA	Water	8260B	
MB 240-519589/8	Method Blank	Total/NA	Water	8260B	
LCS 240-519589/5	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Client Sample ID: TRIP BLANK_117

Lab Sample ID: 240-163383-1
Matrix: Water
Date Collected: 03/03/22 00:00
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519589	03/10/22 17:50	TJL1	TAL CAN

Client Sample ID: MW-222S_030322

Lab Sample ID: 240-163383-2
Matrix: Water
Date Collected: 03/03/22 09:20
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519589	03/10/22 18:12	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/09/22 20:31	CS	TAL CAN

Client Sample ID: MW-37_030322

Lab Sample ID: 240-163383-3
Matrix: Water
Date Collected: 03/03/22 12:25
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519589	03/10/22 18:35	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/09/22 20:55	CS	TAL CAN

Client Sample ID: MW-38_030322

Lab Sample ID: 240-163383-4
Matrix: Water
Date Collected: 03/03/22 10:35
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519589	03/10/22 18:57	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/09/22 21:19	CS	TAL CAN

Client Sample ID: MW-01_030322

Lab Sample ID: 240-163383-5
Matrix: Water
Date Collected: 03/03/22 14:20
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519589	03/10/22 19:19	TJL1	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/09/22 21:43	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-163383-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Dominic Harmon	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.401.03	Shipping/Tracking No:			
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 117	—	—		1						1					N	6	X	X	X	X	X	X		1 Trip Blank
MW-2225_030322	3/3/22	0920		6						6					N	6	X	✓	X	✓	✓	✓	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-37_030322	3/3/22	1225		6						6					N	6	X	✓	X	X	X	✓	X	↓
MW-38_030322	3/3/22	1035		6						6					N	6	X	X	X	X	X	X	X	↓
MW-01_030322	3/3/22	1420		6						6					N	6	X	X	X	X	X	X	X	↓

240-163383 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis 1510	03/3/22 1510	Novi Cold Storage	Arcadis	3/3/22 1510
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	3/7/22 1240		EEMA	3/7/22
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEMA	3/7/22		EETMC	3-8-22 950

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 163383**
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Tammy Royer

Cooler Received on 3-8-22 Opened on 3-8-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-14 (CF -0.2 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC157842
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 60358	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-14 IR-15	1.5	1.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	1.0	0.8	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-14 IR-15	

DATA VERIFICATION REPORT

March 22, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 163383-1
Sample date: 2022-03-03
Report received by CADENA: 2022-03-22
Initial Data Verification completed by CADENA: 2022-03-22
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch did not include MS/MSD recovery data due to insufficient sample volume available for spiking according to the laboratory submittal case narrative.

GCMS VOC SIM QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 163383-1

	Sample Name:	TRIP BLANK_117				MW-222S_030322				MW-37_030322				MW-38_030322				MW-01_030322			
	Lab Sample ID:	2401633831				2401633832				2401633833				2401633834				2401633835			
	Sample Date:	3/3/2022				3/3/2022				3/3/2022				3/3/2022				3/3/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260B																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260BBSim																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-163389-1
Client Project/Site: Ford LTP - On-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
3/22/2022 9:29:11 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

LINKS
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Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-163389-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-163389-1

Comments
No additional comments.

Receipt
The samples were received on 3/8/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8º C and 1.3º C.

GC/MS VOA
Method 8260B: Surrogate recovery for the following sample was outside of acceptance limits: TRIP BLANK_91 (240-163389-1). There was insufficient sample to perform a re-extraction; therefore, the data have been reported.

Method 8260B: The continuing calibration verification (CCV) associated with batch 519738 recovered above the upper control limit for 1,1-Dichloroethene. The samples associated with this CCV were non-detect for the affected analyte; therefore, the data have been reported. The associated sample is impacted: MW-71_030422 (240-163389-2).

Method 8260B SIM: The matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-519570 was above calibration range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163389-1	TRIP BLANK_91	Water	03/04/22 00:00	03/08/22 09:50
240-163389-2	MW-71_030422	Water	03/04/22 11:35	03/08/22 09:50
240-163389-3	PW-16-02__030422	Water	03/04/22 13:50	03/08/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Client Sample ID: TRIP BLANK_91 — Lab Sample ID: 240-163389-1

No Detections.

Client Sample ID: MW-71_030422 — Lab Sample ID: 240-163389-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
cis-1,2-Dichloroethene	0.94	J	1.0	0.46	ug/L	1		8260B	Total/NA

Client Sample ID: PW-16-02__030422 — Lab Sample ID: 240-163389-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.0		1.0	0.46	ug/L	1		8260B	Total/NA
Vinyl chloride	0.88	J	1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Client Sample ID: TRIP BLANK_91

Date Collected: 03/04/22 00:00
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163389-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 17:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 17:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 17:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 17:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 17:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*63*		*62 - 137*		*03/10/22 17:51*	*1*
4-Bromofluorobenzene (Surr)	*113*		*56 - 136*		*03/10/22 17:51*	*1*
Toluene-d8 (Surr)	*77*	*S1-*	*78 - 122*		*03/10/22 17:51*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*03/10/22 17:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Client Sample ID: MW-71_030422
Date Collected: 03/04/22 11:35
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163389-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.2**	**J**	2.0	0.86	ug/L			03/10/22 02:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*03/10/22 02:53*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/11/22 13:54	1
cis-1,2-Dichloroethene	**0.94**	**J**	1.0	0.46	ug/L			03/11/22 13:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 13:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/11/22 13:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 13:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/11/22 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*62 - 137*		*03/11/22 13:54*	*1*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*		*03/11/22 13:54*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*03/11/22 13:54*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*03/11/22 13:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Client Sample ID: PW-16-02__030422
Date Collected: 03/04/22 13:50
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163389-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/10/22 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*03/10/22 03:17*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 18:40	1
cis-1,2-Dichloroethene	**1.0**		1.0	0.46	ug/L			03/10/22 18:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 18:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 18:40	1
Vinyl chloride	**0.88**	**J**	1.0	0.45	ug/L			03/10/22 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*62 - 137*		*03/10/22 18:40*	*1*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*		*03/10/22 18:40*	*1*
Toluene-d8 (Surr)	*79*		*78 - 122*		*03/10/22 18:40*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*03/10/22 18:40*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-163386-B-6 MS	Matrix Spike	66	116	76 S1-	90
240-163386-B-6 MSD	Matrix Spike Duplicate	64	116	78	91
240-163389-1	TRIP BLANK_91	63	113	77 S1-	91
240-163389-2	MW-71_030422	79	116	80	94
240-163389-3	PW-16-02__030422	68	114	79	97
240-163482-B-6 MS	Matrix Spike	70	115	82	91
240-163482-B-6 MSD	Matrix Spike Duplicate	75	122	83	97
LCS 240-519609/5	Lab Control Sample	66	114	78	92
LCS 240-519738/5	Lab Control Sample	74	124	84	91
MB 240-519609/8	Method Blank	68	120	79	95
MB 240-519738/8	Method Blank	78	115	81	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-163389-2	MW-71_030422	83
240-163389-3	PW-16-02__030422	82
LCS 240-519570/4	Lab Control Sample	81
MB 240-519570/5	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519609/8
Matrix: Water
Analysis Batch: 519609

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 13:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 13:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 13:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 13:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 13:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 13:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*62 - 137*		*03/10/22 13:21*	*1*
4-Bromofluorobenzene (Surr)	*120*		*56 - 136*		*03/10/22 13:21*	*1*
Toluene-d8 (Surr)	*79*		*78 - 122*		*03/10/22 13:21*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*03/10/22 13:21*	*1*

Lab Sample ID: LCS 240-519609/5
Matrix: Water
Analysis Batch: 519609

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	23.9		ug/L		120	63 - 134
cis-1,2-Dichloroethene	20.0	23.9		ug/L		119	77 - 123
Tetrachloroethene	20.0	17.2		ug/L		86	76 - 123
trans-1,2-Dichloroethene	20.0	23.9		ug/L		119	75 - 124
Trichloroethene	20.0	24.5		ug/L		122	70 - 122
Vinyl chloride	20.0	16.8		ug/L		84	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*66*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*78*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-163386-B-6 MS
Matrix: Water
Analysis Batch: 519609

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1000	U	20000	22600		ug/L		113	56 - 135
cis-1,2-Dichloroethene	29000		20000	49400		ug/L		104	66 - 128
Tetrachloroethene	1000	U	20000	15200		ug/L		76	62 - 131
trans-1,2-Dichloroethene	910	J	20000	23400		ug/L		113	56 - 136
Trichloroethene	5400		20000	27500		ug/L		111	61 - 124
Vinyl chloride	1000	U	20000	17400		ug/L		87	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*66*		*62 - 137*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*
Toluene-d8 (Surr)	*76*	*S1-*	*78 - 122*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-163386-B-6 MS
Matrix: Water
Analysis Batch: 519609

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-163386-B-6 MSD
Matrix: Water
Analysis Batch: 519609

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1000	U	20000	22100		ug/L		111	56 - 135	2	26
cis-1,2-Dichloroethene	29000		20000	48900		ug/L		102	66 - 128	1	14
Tetrachloroethene	1000	U	20000	15300		ug/L		76	62 - 131	0	20
trans-1,2-Dichloroethene	910	J	20000	23100		ug/L		111	56 - 136	1	15
Trichloroethene	5400		20000	27200		ug/L		109	61 - 124	1	15
Vinyl chloride	1000	U	20000	19200		ug/L		96	43 - 157	10	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*64*		*62 - 137*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*
Toluene-d8 (Surr)	*78*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: MB 240-519738/8
Matrix: Water
Analysis Batch: 519738

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/11/22 13:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/11/22 13:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 13:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/11/22 13:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 13:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/11/22 13:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*62 - 137*		*03/11/22 13:02*	*1*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*		*03/11/22 13:02*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*03/11/22 13:02*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*03/11/22 13:02*	*1*

Lab Sample ID: LCS 240-519738/5
Matrix: Water
Analysis Batch: 519738

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	20.0	25.1		ug/L		125	63 - 134
cis-1,2-Dichloroethene	20.0	22.4		ug/L		112	77 - 123
Tetrachloroethene	20.0	17.8		ug/L		89	76 - 123
trans-1,2-Dichloroethene	20.0	23.4		ug/L		117	75 - 124
Trichloroethene	20.0	23.7		ug/L		119	70 - 122

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-519738/5
Matrix: Water
Analysis Batch: 519738

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl chloride			20.0	24.0		ug/L		120	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*74*		*62 - 137*
4-Bromofluorobenzene (Surr)	*124*		*56 - 136*
Toluene-d8 (Surr)	*84*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-163482-B-6 MS
Matrix: Water
Analysis Batch: 519738

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene	10	U	200	237		ug/L		119	56 - 135		
cis-1,2-Dichloroethene	39		200	268		ug/L		114	66 - 128		
Tetrachloroethene	10	U	200	173		ug/L		87	62 - 131		
trans-1,2-Dichloroethene	10	U	200	230		ug/L		115	56 - 136		
Trichloroethene	100		200	337		ug/L		116	61 - 124		
Vinyl chloride	10	U	200	277		ug/L		139	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*62 - 137*
4-Bromofluorobenzene (Surr)	*115*		*56 - 136*
Toluene-d8 (Surr)	*82*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-163482-B-6 MSD
Matrix: Water
Analysis Batch: 519738

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	200	236		ug/L		118	56 - 135	1	26
cis-1,2-Dichloroethene	39		200	265		ug/L		113	66 - 128	1	14
Tetrachloroethene	10	U	200	163		ug/L		81	62 - 131	6	20
trans-1,2-Dichloroethene	10	U	200	222		ug/L		111	56 - 136	4	15
Trichloroethene	100		200	320		ug/L		108	61 - 124	5	15
Vinyl chloride	10	U	200	259		ug/L		130	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*62 - 137*
4-Bromofluorobenzene (Surr)	*122*		*56 - 136*
Toluene-d8 (Surr)	*83*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519570/5
Matrix: Water
Analysis Batch: 519570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 19:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*03/09/22 19:19*	*1*

Lab Sample ID: LCS 240-519570/4
Matrix: Water
Analysis Batch: 519570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.8		ug/L		108	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

GC/MS VOA

Analysis Batch: 519570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163389-2	MW-71_030422	Total/NA	Water	8260B SIM	
240-163389-3	PW-16-02__030422	Total/NA	Water	8260B SIM	
MB 240-519570/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519570/4	Lab Control Sample	Total/NA	Water	8260B SIM	

Analysis Batch: 519609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163389-1	TRIP BLANK_91	Total/NA	Water	8260B	
240-163389-3	PW-16-02__030422	Total/NA	Water	8260B	
MB 240-519609/8	Method Blank	Total/NA	Water	8260B	
LCS 240-519609/5	Lab Control Sample	Total/NA	Water	8260B	
240-163386-B-6 MS	Matrix Spike	Total/NA	Water	8260B	
240-163386-B-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 519738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163389-2	MW-71_030422	Total/NA	Water	8260B	
MB 240-519738/8	Method Blank	Total/NA	Water	8260B	
LCS 240-519738/5	Lab Control Sample	Total/NA	Water	8260B	
240-163482-B-6 MS	Matrix Spike	Total/NA	Water	8260B	
240-163482-B-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Client Sample ID: TRIP BLANK_91

Lab Sample ID: 240-163389-1
Date Collected: 03/04/22 00:00
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519609	03/10/22 17:51	LEE	TAL CAN

Client Sample ID: MW-71_030422

Lab Sample ID: 240-163389-2
Date Collected: 03/04/22 11:35
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519738	03/11/22 13:54	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/10/22 02:53	CS	TAL CAN

Client Sample ID: PW-16-02__030422

Lab Sample ID: 240-163389-3
Date Collected: 03/04/22 13:50
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519609	03/10/22 18:40	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/10/22 03:17	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163389-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	03-16-22
Oregon	NELAP	4062	03-16-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No: 1
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Samantha Hindle	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_91	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-71_030422	3/4/22	11:35		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
PW-16-02_030422	3/4/22	13.50		X						6					N	G	X	X	X	X	X	X	X	" "

240-163389 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Mont

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindle	ARCADIS	2/4/22 16:20	NOVI COLD STORAGE	ARCADIS	2/4/22 16.20
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	3/7/22 1240	[illegible]	EEMA	3/7/22
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EEMA	3/7/22	[illegible]	EETMC	3-8-22 950

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Tammy Royer

Cooler Received on 3-8-22 Opened on 3-8-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-14 (CF -0.2 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	Yes	No
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC157842
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 60358	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

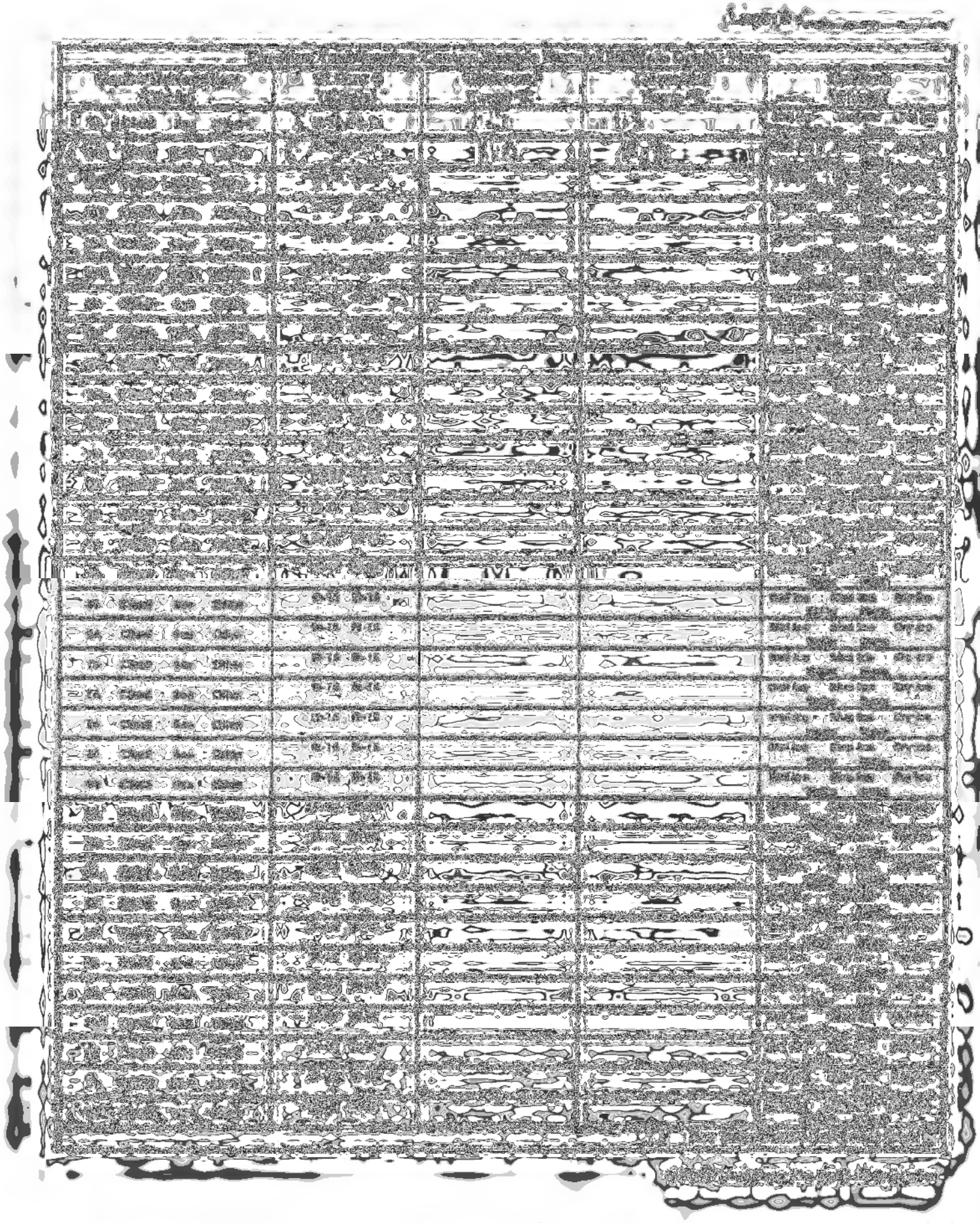
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 240-163389-1

Login Number: 163389
List Number: 1
Creator: Royer, Tammy R

List Source: Eurofins Canton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		Refer to CRF
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

DATA VERIFICATION REPORT

March 22, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 163389-1
Sample date: 2022-03-04
Report received by CADENA: 2022-03-22
Initial Data Verification completed by CADENA: 2022-03-22
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SUR - GCMS VOC sample TRIP BLANK surrogate recoveries were outliers biased low but greater than 10% for 1 out of 4 surrogates. These client sample results should be considered to be estimated and qualified with UJ flags if non-detect.

GCMS VOC SIM QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 163389-1

Sample Name: TRIP BLANK_91
Lab Sample ID: 2401633891
Sample Date: 3/4/2022

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260B					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 163389-1

		Sample Name:	TRIP BLANK_91				MW-71_030422				PW-16-02__030422			
		Lab Sample ID:	2401633891				2401633892				2401633893			
		Sample Date:	3/4/2022				3/4/2022				3/4/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260B														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	UJ	0.94	1.0	ug/l	J	1.0	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	UJ	ND	1.0	ug/l	---	0.88	1.0	ug/l	J
OSW-8260BBSim														
1,4-Dioxane	123-91-1						1.2	2.0	ug/l	J	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-163393-1
Client Project/Site: Ford LTP - On-Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
3/22/2022 10:09:27 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@Eurofinset.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Job ID: 240-163393-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-163393-1

Comments
No additional comments.

Receipt
The samples were received on 3/8/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8º C and 1.3º C.

GC/MS VOA
Method 8260B: No MS/MSD in batch 519762 due to a re-analysis needed: MW-57_030322 (240-163393-5).

Method 8260B SIM: The matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-519570 was above calibration range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163393-1	TRIP BLANK_94	Water	03/03/22 00:00	03/08/22 09:50
240-163393-2	MW-53_030322	Water	03/03/22 12:31	03/08/22 09:50
240-163393-3	MW-54S_030322	Water	03/03/22 13:51	03/08/22 09:50
240-163393-4	MW-54_030322	Water	03/03/22 15:01	03/08/22 09:50
240-163393-5	MW-57_030322	Water	03/03/22 16:31	03/08/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Client Sample ID: TRIP BLANK_94 — Lab Sample ID: 240-163393-1

No Detections.

Client Sample ID: MW-53_030322 — Lab Sample ID: 240-163393-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA

Client Sample ID: MW-54S_030322 — Lab Sample ID: 240-163393-3

No Detections.

Client Sample ID: MW-54_030322 — Lab Sample ID: 240-163393-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.0		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: MW-57_030322 — Lab Sample ID: 240-163393-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	0.68	J	1.0	0.45	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Client Sample ID: TRIP BLANK_94
Date Collected: 03/03/22 00:00
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163393-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 14:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 14:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 14:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 14:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 14:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 14:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*03/10/22 14:57*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*03/10/22 14:57*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*03/10/22 14:57*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*03/10/22 14:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Client Sample ID: MW-53_030322
Date Collected: 03/03/22 12:31
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163393-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			03/10/22 03:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*03/10/22 03:41*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 15:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 15:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 15:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 15:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 15:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 15:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*03/10/22 15:45*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*03/10/22 15:45*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*03/10/22 15:45*	*1*
Dibromofluoromethane (Surr)	*111*		*73 - 120*		*03/10/22 15:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Client Sample ID: MW-54S_030322

Date Collected: 03/03/22 13:51
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163393-3

Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/10/22 04:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*03/10/22 04:04*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 16:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 16:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 16:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 16:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 16:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*03/10/22 16:08*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*03/10/22 16:08*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*03/10/22 16:08*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*03/10/22 16:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Client Sample ID: MW-54_030322
Date Collected: 03/03/22 15:01
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163393-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.0**		2.0	0.86	ug/L			03/10/22 04:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*03/10/22 04:28*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 16:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 16:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 16:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 16:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 16:32	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			03/10/22 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*03/10/22 16:32*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*03/10/22 16:32*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*03/10/22 16:32*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*03/10/22 16:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Client Sample ID: MW-57_030322
Date Collected: 03/03/22 16:31
Date Received: 03/08/22 09:50

Lab Sample ID: 240-163393-5
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.2	J	2.0	0.86	ug/L			03/14/22 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*03/14/22 19:11*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/11/22 16:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/11/22 16:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 16:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/11/22 16:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 16:00	1
Vinyl chloride	0.68	J	1.0	0.45	ug/L			03/11/22 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*03/11/22 16:00*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*03/11/22 16:00*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*03/11/22 16:00*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*03/11/22 16:00*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-163359-B-13 MS	Matrix Spike	105	107	109	111
240-163359-B-13 MSD	Matrix Spike Duplicate	105	114	115	113
240-163393-1	TRIP BLANK_94	106	98	102	109
240-163393-2	MW-53_030322	109	102	107	111
240-163393-3	MW-54S_030322	109	100	103	112
240-163393-4	MW-54_030322	112	103	106	114
240-163393-5	MW-57_030322	106	99	101	109
LCS 240-519638/5	Lab Control Sample	99	102	104	105
LCS 240-519762/5	Lab Control Sample	104	107	110	108
MB 240-519638/8	Method Blank	102	101	101	108
MB 240-519762/8	Method Blank	104	102	104	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-163393-2	MW-53_030322	83
240-163393-3	MW-54S_030322	82
240-163393-4	MW-54_030322	82
240-163393-5	MW-57_030322	78
240-163560-E-5 MS	Matrix Spike	82
240-163560-E-5 MSD	Matrix Spike Duplicate	83
LCS 240-519570/4	Lab Control Sample	81
LCS 240-519881/4	Lab Control Sample	80
MB 240-519570/5	Method Blank	84
MB 240-519881/5	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519638/8
Matrix: Water
Analysis Batch: 519638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/10/22 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/10/22 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/10/22 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/10/22 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/10/22 14:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*03/10/22 14:33*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*03/10/22 14:33*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*03/10/22 14:33*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*03/10/22 14:33*	*1*

Lab Sample ID: LCS 240-519638/5
Matrix: Water
Analysis Batch: 519638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	25.3		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.8		ug/L		99	76 - 123
trans-1,2-Dichloroethene	25.0	25.2		ug/L		101	75 - 124
Trichloroethene	25.0	23.9		ug/L		96	70 - 122
Vinyl chloride	25.0	23.8		ug/L		95	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-163359-B-13 MS
Matrix: Water
Analysis Batch: 519638

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	1300		2500	3470		ug/L		87	66 - 128
Tetrachloroethene	2600		2500	4790		ug/L		86	62 - 131
Trichloroethene	580		2500	2700		ug/L		85	61 - 124
Vinyl chloride	610		2500	2700		ug/L		83	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*111*		*73 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-163359-B-13 MSD
Matrix: Water
Analysis Batch: 519638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1300		2500	3380		ug/L		83	66 - 128	3	14
Tetrachloroethene	2600		2500	4840		ug/L		88	62 - 131	1	20
Trichloroethene	580		2500	2670		ug/L		84	61 - 124	1	15
Vinyl chloride	610		2500	2820		ug/L		88	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*
4-Bromofluorobenzene (Surr)	*114*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*
Dibromofluoromethane (Surr)	*113*		*73 - 120*

Lab Sample ID: MB 240-519762/8
Matrix: Water
Analysis Batch: 519762

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/11/22 15:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/11/22 15:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 15:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/11/22 15:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/11/22 15:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/11/22 15:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*03/11/22 15:13*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*03/11/22 15:13*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*03/11/22 15:13*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*03/11/22 15:13*	*1*

Lab Sample ID: LCS 240-519762/5
Matrix: Water
Analysis Batch: 519762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	26.0		ug/L		104	63 - 134
cis-1,2-Dichloroethene	25.0	24.2		ug/L		97	77 - 123
Tetrachloroethene	25.0	23.4		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		101	75 - 124
Trichloroethene	25.0	23.0		ug/L		92	70 - 122
Vinyl chloride	25.0	24.0		ug/L		96	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-519570/5
Matrix: Water
Analysis Batch: 519570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/09/22 19:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*03/09/22 19:19*	*1*

Lab Sample ID: LCS 240-519570/4
Matrix: Water
Analysis Batch: 519570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.8		ug/L		108	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: MB 240-519881/5
Matrix: Water
Analysis Batch: 519881

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			03/14/22 18:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*03/14/22 18:24*	*1*

Lab Sample ID: LCS 240-519881/4
Matrix: Water
Analysis Batch: 519881

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.6		ug/L		106	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-163560-E-5 MS
Matrix: Water
Analysis Batch: 519881

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	1.3	J	10.0	12.1		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-163560-E-5 MSD
Matrix: Water
Analysis Batch: 519881

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	1.3	J	10.0	12.1		ug/L		108	51 - 153	0	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

GC/MS VOA

Analysis Batch: 519570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163393-2	MW-53_030322	Total/NA	Water	8260B SIM	
240-163393-3	MW-54S_030322	Total/NA	Water	8260B SIM	
240-163393-4	MW-54_030322	Total/NA	Water	8260B SIM	
MB 240-519570/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519570/4	Lab Control Sample	Total/NA	Water	8260B SIM	

Analysis Batch: 519638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163393-1	TRIP BLANK_94	Total/NA	Water	8260B	
240-163393-2	MW-53_030322	Total/NA	Water	8260B	
240-163393-3	MW-54S_030322	Total/NA	Water	8260B	
240-163393-4	MW-54_030322	Total/NA	Water	8260B	
MB 240-519638/8	Method Blank	Total/NA	Water	8260B	
LCS 240-519638/5	Lab Control Sample	Total/NA	Water	8260B	
240-163359-B-13 MS	Matrix Spike	Total/NA	Water	8260B	
240-163359-B-13 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 519762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163393-5	MW-57_030322	Total/NA	Water	8260B	
MB 240-519762/8	Method Blank	Total/NA	Water	8260B	
LCS 240-519762/5	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 519881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163393-5	MW-57_030322	Total/NA	Water	8260B SIM	
MB 240-519881/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-519881/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-163560-E-5 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-163560-E-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Client Sample ID: TRIP BLANK_94
Lab Sample ID: 240-163393-1
Date Collected: 03/03/22 00:00
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519638	03/10/22 14:57	SAM	TAL CAN

Client Sample ID: MW-53_030322
Lab Sample ID: 240-163393-2
Date Collected: 03/03/22 12:31
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519638	03/10/22 15:45	SAM	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/10/22 03:41	CS	TAL CAN

Client Sample ID: MW-54S_030322
Lab Sample ID: 240-163393-3
Date Collected: 03/03/22 13:51
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519638	03/10/22 16:08	SAM	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/10/22 04:04	CS	TAL CAN

Client Sample ID: MW-54_030322
Lab Sample ID: 240-163393-4
Date Collected: 03/03/22 15:01
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519638	03/10/22 16:32	SAM	TAL CAN
Total/NA	Analysis	8260B SIM		1	519570	03/10/22 04:28	CS	TAL CAN

Client Sample ID: MW-57_030322
Lab Sample ID: 240-163393-5
Date Collected: 03/03/22 16:31
Matrix: Water
Date Received: 03/08/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	519762	03/11/22 16:00	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	519881	03/14/22 19:11	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On-Site

Job ID: 240-163393-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	03-16-22
Oregon	NELAP	4062	03-16-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 94	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-53_030322	03/03/22	12:31		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-545_030322	03/03/22	13:51		X						6					N	G	X	X	X	X	X	X	X	
MW-54_030322	03/03/22	15:01		X						6					N	G	X	X	X	X	X	X	X	
MW-57_030322	03/03/22	16:31		X						6					N	G	X	X	X	X	X	X	X	

240-153393 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Mo

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Gary Schafer	Arcadis	3/4/22 8:20	Received by: Novi cold storage	Arcadis	3/4/22 8:20
Relinquished by:	Company: Arcadis	Date/Time: 3/7/22 1240	Received by:	Company: EETA	Date/Time: 3/4/22
Relinquished by:	Company: EETA	Date/Time: 3/7/22	Received in Laboratory by: Tammy Forga	Company: EETDC	Date/Time: 3-8-22 950

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3/22/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Tammy Royer

Cooler Received on 3-8-22 Opened on 3-8-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time **Storage Location**

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-14 (CF -0.2 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC157842
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 60358	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

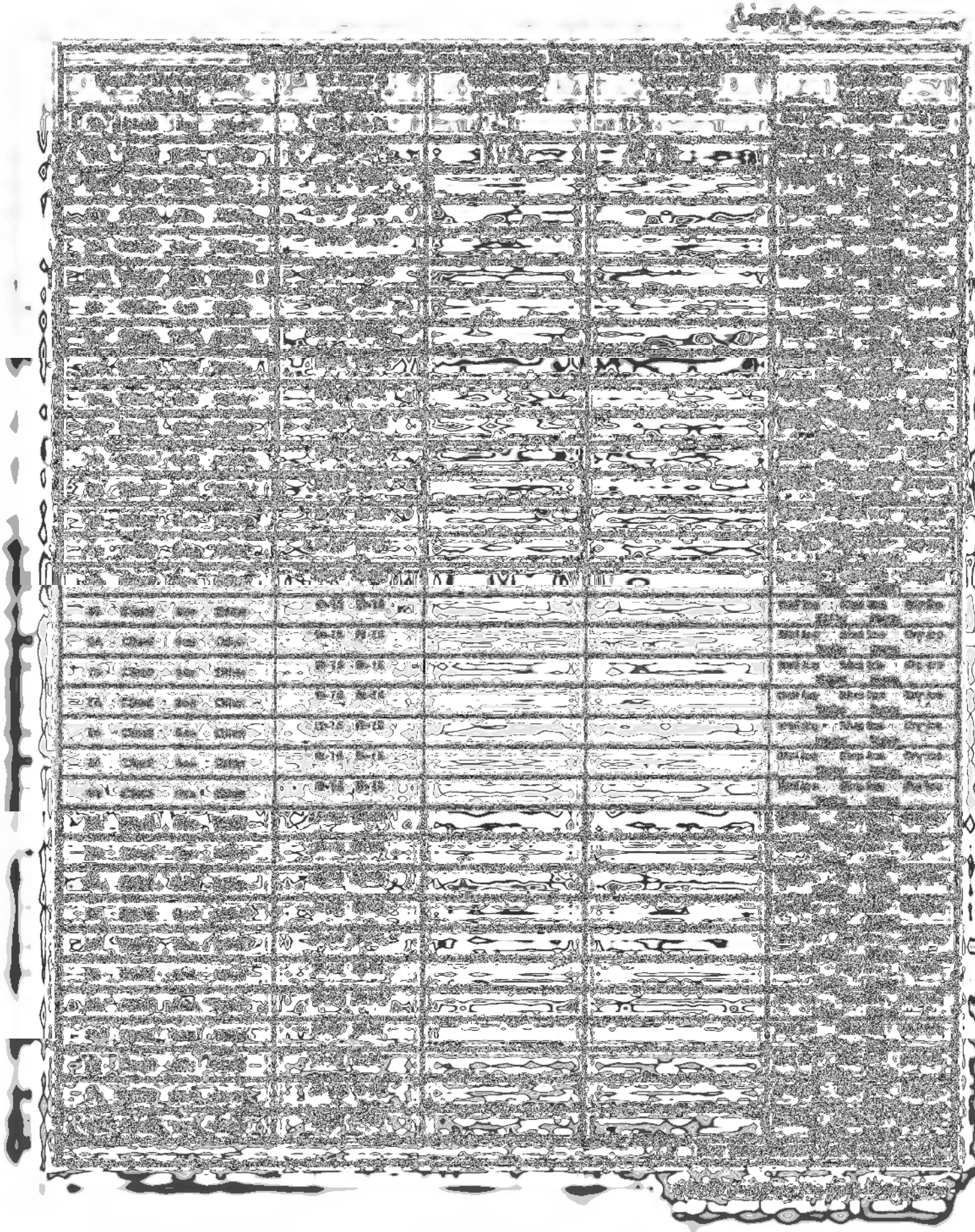
19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 240-163393-1

Login Number: 163393
List Number: 1
Creator: Royer, Tammy R

List Source: Eurofins Canton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		Refer to CRF
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

DATA VERIFICATION REPORT

March 22, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory submittal: 163393-1
Sample date: 2022-03-03
Report received by CADENA: 2022-03-22
Initial Data Verification completed by CADENA: 2022-03-22
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM and VOC QC MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - North Central
Laboratory Submittal: 163393-1

		Sample Name:	TRIP BLANK_94				MW-53_030322				MW-54S_030322				MW-54_030322				MW-57_030322			
		Lab Sample ID:	2401633931				2401633932				2401633933				2401633934				2401633935			
		Sample Date:	3/3/2022				3/3/2022				3/3/2022				3/3/2022				3/3/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
	OSW-8260B																					
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	0.68	1.0	ug/l	J
	OSW-8260BBSim																					
	1,4-Dioxane	123-91-1					1.4	2.0	ug/l	J	ND	2.0	ug/l	---	2.0	2.0	ug/l	---	1.2	2.0	ug/l	J

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166116-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
5/19/2022 10:31:36 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Job ID: 240-166116-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166116-1

Comments
No additional comments.

Receipt
The samples were received on 5/6/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6º C.

GC/MS VOA
Method 8260D SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-21_050422 (240-166116-3). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166116-1	TRIP BLANK_179	Water	05/04/22 00:00	05/06/22 08:00
240-166116-2	PW-16-01_050422	Water	05/04/22 09:36	05/06/22 08:00
240-166116-3	MW-21_050422	Water	05/04/22 10:32	05/06/22 08:00
240-166116-4	MW-49_050422	Water	05/04/22 11:45	05/06/22 08:00
240-166116-5	MW-20_050422	Water	05/04/22 12:55	05/06/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Client Sample ID: TRIP BLANK_179 — Lab Sample ID: 240-166116-1

No Detections.

Client Sample ID: PW-16-01_050422 — Lab Sample ID: 240-166116-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	68		13	5.8	ug/L	12.5		8260D	Total/NA
trans-1,2-Dichloroethene	9.1	J	13	6.4	ug/L	12.5		8260D	Total/NA
Vinyl chloride	980		20	9.0	ug/L	20		8260D	Total/NA

Client Sample ID: MW-21_050422 — Lab Sample ID: 240-166116-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	17		4.0	1.7	ug/L	2		8260D SIM	Total/NA
cis-1,2-Dichloroethene	320		10	4.6	ug/L	10		8260D	Total/NA
Vinyl chloride	270		10	4.5	ug/L	10		8260D	Total/NA

Client Sample ID: MW-49_050422 — Lab Sample ID: 240-166116-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	17		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	32000		1000	460	ug/L	1000		8260D	Total/NA
Vinyl chloride	8500		1000	450	ug/L	1000		8260D	Total/NA

Client Sample ID: MW-20_050422 — Lab Sample ID: 240-166116-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	52		2.0	0.92	ug/L	2		8260D	Total/NA
Vinyl chloride	11		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Client Sample ID: TRIP BLANK_179

Date Collected: 05/04/22 00:00
Date Received: 05/06/22 08:00

Lab Sample ID: 240-166116-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/12/22 14:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/12/22 14:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/12/22 14:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/12/22 14:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/12/22 14:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/12/22 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*05/12/22 14:05*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*05/12/22 14:05*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*05/12/22 14:05*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/12/22 14:05*	*1*

Client Sample ID: PW-16-01_050422

Date Collected: 05/04/22 09:36
Date Received: 05/06/22 08:00

Lab Sample ID: 240-166116-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.2**	**J**	2.0	0.86	ug/L			05/10/22 02:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*05/10/22 02:38*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			05/12/22 14:30	12.5
cis-1,2-Dichloroethene	**68**		13	5.8	ug/L			05/12/22 14:30	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			05/12/22 14:30	12.5
trans-1,2-Dichloroethene	**9.1**	**J**	13	6.4	ug/L			05/12/22 14:30	12.5
Trichloroethene	13	U	13	5.5	ug/L			05/12/22 14:30	12.5
Vinyl chloride	**980**		20	9.0	ug/L			05/13/22 12:18	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/12/22 14:30*	*12.5*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*05/13/22 12:18*	*20*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*05/12/22 14:30*	*12.5*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*05/13/22 12:18*	*20*
Toluene-d8 (Surr)	*92*		*78 - 122*		*05/12/22 14:30*	*12.5*
Toluene-d8 (Surr)	*92*		*78 - 122*		*05/13/22 12:18*	*20*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*05/12/22 14:30*	*12.5*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*05/13/22 12:18*	*20*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Client Sample ID: MW-21_050422
Date Collected: 05/04/22 10:32
Date Received: 05/06/22 08:00

Lab Sample ID: 240-166116-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**17**		4.0	1.7	ug/L			05/10/22 03:02	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*05/10/22 03:02*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	10	U	10	4.9	ug/L			05/13/22 12:43	10
cis-1,2-Dichloroethene	**320**		10	4.6	ug/L			05/13/22 12:43	10
Tetrachloroethene	10	U	10	4.4	ug/L			05/13/22 12:43	10
trans-1,2-Dichloroethene	10	U	10	5.1	ug/L			05/13/22 12:43	10
Trichloroethene	10	U	10	4.4	ug/L			05/13/22 12:43	10
Vinyl chloride	**270**		10	4.5	ug/L			05/13/22 12:43	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*05/13/22 12:43*	*10*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*05/13/22 12:43*	*10*
Toluene-d8 (Surr)	*90*		*78 - 122*		*05/13/22 12:43*	*10*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*05/13/22 12:43*	*10*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Client Sample ID: MW-49_050422
Date Collected: 05/04/22 11:45
Date Received: 05/06/22 08:00

Lab Sample ID: 240-166116-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**17**		2.0	0.86	ug/L			05/10/22 03:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*05/10/22 03:25*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1000	U	1000	490	ug/L			05/12/22 15:19	1000
cis-1,2-Dichloroethene	**32000**		1000	460	ug/L			05/12/22 15:19	1000
Tetrachloroethene	1000	U	1000	440	ug/L			05/12/22 15:19	1000
trans-1,2-Dichloroethene	1000	U	1000	510	ug/L			05/12/22 15:19	1000
Trichloroethene	1000	U	1000	440	ug/L			05/12/22 15:19	1000
Vinyl chloride	**8500**		1000	450	ug/L			05/12/22 15:19	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*05/12/22 15:19*	*1000*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*05/12/22 15:19*	*1000*
Toluene-d8 (Surr)	*91*		*78 - 122*		*05/12/22 15:19*	*1000*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*05/12/22 15:19*	*1000*

Client Sample ID: MW-20_050422

Date Collected: 05/04/22 12:55
Date Received: 05/06/22 08:00

Lab Sample ID: 240-166116-5

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/10/22 03:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*05/10/22 03:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/12/22 15:43	1
cis-1,2-Dichloroethene	**52**		2.0	0.92	ug/L			05/13/22 13:07	2
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/12/22 15:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/12/22 15:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/12/22 15:43	1
Vinyl chloride	**11**		1.0	0.45	ug/L			05/12/22 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/12/22 15:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*05/13/22 13:07*	*2*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*05/12/22 15:43*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*05/13/22 13:07*	*2*
Toluene-d8 (Surr)	*94*		*78 - 122*		*05/12/22 15:43*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*05/13/22 13:07*	*2*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*05/12/22 15:43*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*05/13/22 13:07*	*2*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166116-1	TRIP BLANK_179	97	90	91	100
240-166116-2	PW-16-01_050422	101	91	92	101
240-166116-2	PW-16-01_050422	97	92	92	101
240-166116-2 MS	PW-16-01_050422	99	96	96	103
240-166116-2 MS	PW-16-01_050422	94	95	92	98
240-166116-2 MSD	PW-16-01_050422	97	93	93	100
240-166116-2 MSD	PW-16-01_050422	93	94	92	98
240-166116-3	MW-21_050422	97	92	90	99
240-166116-4	MW-49_050422	97	92	91	101
240-166116-5	MW-20_050422	101	95	94	102
240-166116-5	MW-20_050422	95	89	87	98
LCS 240-526147/5	Lab Control Sample	94	94	93	98
LCS 240-526327/5	Lab Control Sample	94	93	92	99
MB 240-526147/8	Method Blank	97	93	92	102
MB 240-526327/8	Method Blank	100	93	93	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166116-2	PW-16-01_050422	88
240-166116-3	MW-21_050422	92
240-166116-4	MW-49_050422	88
240-166116-5	MW-20_050422	87
240-166141-F-2 MS	Matrix Spike	89
240-166141-I-2 MSD	Matrix Spike Duplicate	89
LCS 240-525692/3	Lab Control Sample	87
MB 240-525692/4	Method Blank	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-526147/8
Matrix: Water
Analysis Batch: 526147

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/12/22 12:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/12/22 12:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/12/22 12:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/12/22 12:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/12/22 12:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/12/22 12:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*05/12/22 12:27*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*05/12/22 12:27*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*05/12/22 12:27*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*05/12/22 12:27*	*1*

Lab Sample ID: LCS 240-526147/5
Matrix: Water
Analysis Batch: 526147

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.9		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	21.8		ug/L		109	77 - 123
Tetrachloroethene	20.0	20.5		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	20.5		ug/L		103	75 - 124
Trichloroethene	20.0	22.0		ug/L		110	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-166116-2 MS
Matrix: Water
Analysis Batch: 526147

Client Sample ID: PW-16-01_050422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	250	252		ug/L		101	56 - 135
cis-1,2-Dichloroethene	68		250	312		ug/L		98	66 - 128
Tetrachloroethene	13	U	250	232		ug/L		93	62 - 131
trans-1,2-Dichloroethene	9.1	J	250	239		ug/L		92	56 - 136
Trichloroethene	13	U	250	249		ug/L		100	61 - 124

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166116-2 MSD
Matrix: Water
Analysis Batch: 526147

Client Sample ID: PW-16-01_050422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	246		ug/L		98	56 - 135	2	26
cis-1,2-Dichloroethene	68		250	312		ug/L		98	66 - 128	0	14
Tetrachloroethene	13	U	250	223		ug/L		89	62 - 131	4	20
trans-1,2-Dichloroethene	9.1	J	250	245		ug/L		95	56 - 136	3	15
Trichloroethene	13	U	250	241		ug/L		97	61 - 124	3	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: MB 240-526327/8
Matrix: Water
Analysis Batch: 526327

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/13/22 11:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/13/22 11:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/13/22 11:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/13/22 11:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/13/22 11:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/13/22 11:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*05/13/22 11:54*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*05/13/22 11:54*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*05/13/22 11:54*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*05/13/22 11:54*	*1*

Lab Sample ID: LCS 240-526327/5
Matrix: Water
Analysis Batch: 526327

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.4		ug/L		102	63 - 134
cis-1,2-Dichloroethene	20.0	20.3		ug/L		101	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		94	76 - 123
trans-1,2-Dichloroethene	20.0	19.3		ug/L		97	75 - 124
Trichloroethene	20.0	19.9		ug/L		100	70 - 122
Vinyl chloride	20.0	20.4		ug/L		102	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166116-2 MS
Matrix: Water
Analysis Batch: 526327

Client Sample ID: PW-16-01_050422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	400	380		ug/L		95	56 - 135
cis-1,2-Dichloroethene	73		400	449		ug/L		94	66 - 128
Tetrachloroethene	20	U	400	353		ug/L		88	62 - 131
trans-1,2-Dichloroethene	20	U	400	371		ug/L		93	56 - 136
Trichloroethene	20	U	400	372		ug/L		93	61 - 124
Vinyl chloride	980		400	1270	E	ug/L		74	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-166116-2 MSD
Matrix: Water
Analysis Batch: 526327

Client Sample ID: PW-16-01_050422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	392		ug/L		98	56 - 135	3	26
cis-1,2-Dichloroethene	73		400	465		ug/L		98	66 - 128	3	14
Tetrachloroethene	20	U	400	371		ug/L		93	62 - 131	5	20
trans-1,2-Dichloroethene	20	U	400	390		ug/L		97	56 - 136	5	15
Trichloroethene	20	U	400	393		ug/L		98	61 - 124	5	15
Vinyl chloride	980		400	1330	E	ug/L		88	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*92*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-525692/4
Matrix: Water
Analysis Batch: 525692

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/09/22 22:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*05/09/22 22:40*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-525692/3
Matrix: Water
Analysis Batch: 525692

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	11.2		ug/L		112	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-166141-F-2 MS
Matrix: Water
Analysis Batch: 525692

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-166141-I-2 MSD
Matrix: Water
Analysis Batch: 525692

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

GC/MS VOA

Analysis Batch: 525692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166116-2	PW-16-01_050422	Total/NA	Water	8260D SIM	
240-166116-3	MW-21_050422	Total/NA	Water	8260D SIM	
240-166116-4	MW-49_050422	Total/NA	Water	8260D SIM	
240-166116-5	MW-20_050422	Total/NA	Water	8260D SIM	
MB 240-525692/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-525692/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166141-F-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166141-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 526147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166116-1	TRIP BLANK_179	Total/NA	Water	8260D	
240-166116-2	PW-16-01_050422	Total/NA	Water	8260D	
240-166116-4	MW-49_050422	Total/NA	Water	8260D	
240-166116-5	MW-20_050422	Total/NA	Water	8260D	
MB 240-526147/8	Method Blank	Total/NA	Water	8260D	
LCS 240-526147/5	Lab Control Sample	Total/NA	Water	8260D	
240-166116-2 MS	PW-16-01_050422	Total/NA	Water	8260D	
240-166116-2 MSD	PW-16-01_050422	Total/NA	Water	8260D	

Analysis Batch: 526327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166116-2	PW-16-01_050422	Total/NA	Water	8260D	
240-166116-3	MW-21_050422	Total/NA	Water	8260D	
240-166116-5	MW-20_050422	Total/NA	Water	8260D	
MB 240-526327/8	Method Blank	Total/NA	Water	8260D	
LCS 240-526327/5	Lab Control Sample	Total/NA	Water	8260D	
240-166116-2 MS	PW-16-01_050422	Total/NA	Water	8260D	
240-166116-2 MSD	PW-16-01_050422	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Client Sample ID: TRIP BLANK_179
Lab Sample ID: 240-166116-1
Date Collected: 05/04/22 00:00
Matrix: Water
Date Received: 05/06/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	526147	05/12/22 14:05	HMB	TAL CAN

Client Sample ID: PW-16-01_050422
Lab Sample ID: 240-166116-2
Date Collected: 05/04/22 09:36
Matrix: Water
Date Received: 05/06/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		12.5	526147	05/12/22 14:30	HMB	TAL CAN
Total/NA	Analysis	8260D		20	526327	05/13/22 12:18	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	525692	05/10/22 02:38	CS	TAL CAN

Client Sample ID: MW-21_050422
Lab Sample ID: 240-166116-3
Date Collected: 05/04/22 10:32
Matrix: Water
Date Received: 05/06/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		10	526327	05/13/22 12:43	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		2	525692	05/10/22 03:02	CS	TAL CAN

Client Sample ID: MW-49_050422
Lab Sample ID: 240-166116-4
Date Collected: 05/04/22 11:45
Matrix: Water
Date Received: 05/06/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1000	526147	05/12/22 15:19	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	525692	05/10/22 03:25	CS	TAL CAN

Client Sample ID: MW-20_050422
Lab Sample ID: 240-166116-5
Date Collected: 05/04/22 12:55
Matrix: Water
Date Received: 05/06/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	526147	05/12/22 15:43	HMB	TAL CAN
Total/NA	Analysis	8260D		2	526327	05/13/22 13:07	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	525692	05/10/22 03:49	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166116-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

1.6 | 1.6

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Xenia Chan	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03					
PO # 30080642.401.03					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn/Ac NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_179	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
PW-16-01_050422	5/4/22	936		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-21_050422	5/4/22	1032		6						6					N	G	X	X	X	X	X	X	X	
MW-49_050422	5/4/22	1145		6						6					N	G	X	X	X	X	X	X	X	
MW-20_050422	5/4/22	1255		6						6					N	G	X	X	X	X	X	X	X	

240-166116 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Xenia Chan	Arcadis	5/4/22 1400	Non Cold Storage	Arcadis	5/4/22 1400
[signature]	ARCADIS	5/5/22 1100	[signature]	TESTA	5/5/22 1105
[signature]	TESTA	5/5/22 1110	[signature]	EETNC	5-6-22 0800

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5/19/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 166116
Canton Facility

Client Arcadis Site Name Ford Livonia Cooler unpacked by: DMS

Cooler Received on 5-6-22 Opened on 5-6-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp. 1.6 °C Corrected Cooler Temp. 1.6 °C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

May 19, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166116-1
Sample date: 2022-05-04
Report received by CADENA: 2022-05-19
Initial Data Verification completed by CADENA: 2022-05-19
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166116-1

		Sample Name:	TRIP BLANK_179				PW-16-01_050422				MW-21_050422				MW-49_050422				MW-20_050422			
		Lab Sample ID:	2401661161				2401661162				2401661163				2401661164				2401661165			
		Sample Date:	5/4/2022				5/4/2022				5/4/2022				5/4/2022				5/4/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	10	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	68	13	ug/l	---	320	10	ug/l	---	32000	1000	ug/l	---	52	2.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	10	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	9.1	13	ug/l	J	ND	10	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	10	ug/l	---	ND	1000	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	980	20	ug/l	---	270	10	ug/l	---	8500	1000	ug/l	---	11	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					1.2	2.0	ug/l	J	17	4.0	ug/l	---	17	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166343-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
5/25/2022 10:51:29 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Job ID: 240-166343-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166343-1

Comments
No additional comments.

Receipt
The samples were received on 5/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.3º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-526914 was outside the method criteria for the following analytes: bromomethane and chloroethane. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analytes is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166343-1	TRIP BLANK_65	Water	05/09/22 00:00	05/11/22 08:00
240-166343-2	MW-18_050922	Water	05/09/22 10:20	05/11/22 08:00
240-166343-3	MW-220S_050922	Water	05/09/22 11:19	05/11/22 08:00
240-166343-4	MW-69_050922	Water	05/09/22 12:36	05/11/22 08:00
240-166343-5	MW-64_050922	Water	05/09/22 13:45	05/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Client Sample ID: TRIP BLANK_65 — Lab Sample ID: 240-166343-1

No Detections.

Client Sample ID: MW-18_050922 — Lab Sample ID: 240-166343-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.65	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-220S_050922 — Lab Sample ID: 240-166343-3

No Detections.

Client Sample ID: MW-69_050922 — Lab Sample ID: 240-166343-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-64_050922 — Lab Sample ID: 240-166343-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.9		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Client Sample ID: TRIP BLANK_65

Date Collected: 05/09/22 00:00
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/17/22 18:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/17/22 18:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 18:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/17/22 18:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 18:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/17/22 18:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/17/22 18:07*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*05/17/22 18:07*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*05/17/22 18:07*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*05/17/22 18:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Client Sample ID: MW-18_050922
Date Collected: 05/09/22 10:20
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/13/22 23:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*05/13/22 23:16*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/17/22 18:29	1
cis-1,2-Dichloroethene	**0.65**	**J**	1.0	0.46	ug/L			05/17/22 18:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 18:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/17/22 18:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 18:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/17/22 18:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*05/17/22 18:29*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*05/17/22 18:29*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*05/17/22 18:29*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*05/17/22 18:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Client Sample ID: MW-220S_050922
Date Collected: 05/09/22 11:19
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/13/22 23:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*05/13/22 23:40*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/17/22 18:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/17/22 18:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 18:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/17/22 18:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 18:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/17/22 18:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*05/17/22 18:52*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*05/17/22 18:52*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*05/17/22 18:52*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*05/17/22 18:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Client Sample ID: MW-69_050922

Date Collected: 05/09/22 12:36
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**5.0**		2.0	0.86	ug/L			05/14/22 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*05/14/22 00:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/17/22 19:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/17/22 19:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 19:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/17/22 19:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 19:14	1
Vinyl chloride	**2.5**		1.0	0.45	ug/L			05/17/22 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*05/17/22 19:14*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*05/17/22 19:14*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*05/17/22 19:14*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*05/17/22 19:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Client Sample ID: MW-64_050922
Date Collected: 05/09/22 13:45
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.1**	**J**	2.0	0.86	ug/L			05/14/22 00:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*05/14/22 00:28*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/18/22 12:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/18/22 12:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/18/22 12:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/18/22 12:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/18/22 12:19	1
Vinyl chloride	**1.9**		1.0	0.45	ug/L			05/18/22 12:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*05/18/22 12:19*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*05/18/22 12:19*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*05/18/22 12:19*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*05/18/22 12:19*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166341-D-2 MS	Matrix Spike	96	107	103	91
240-166341-E-2 MSD	Matrix Spike Duplicate	97	107	104	92
240-166343-1	TRIP BLANK_65	101	98	102	91
240-166343-2	MW-18_050922	102	101	104	91
240-166343-3	MW-220S_050922	100	100	102	91
240-166343-4	MW-69_050922	102	102	105	93
240-166343-5	MW-64_050922	100	97	101	91
240-166357-E-1 MSD	Matrix Spike Duplicate	98	106	104	92
240-166357-F-1 MS	Matrix Spike	98	108	106	93
LCS 240-526755/5	Lab Control Sample	98	110	106	94
LCS 240-526914/5	Lab Control Sample	97	104	103	92
MB 240-526755/8	Method Blank	101	102	103	93
MB 240-526914/8	Method Blank	101	101	103	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166341-G-2 MS	Matrix Spike	89
240-166341-M-2 MSD	Matrix Spike Duplicate	90
240-166343-2	MW-18_050922	87
240-166343-3	MW-220S_050922	88
240-166343-4	MW-69_050922	91
240-166343-5	MW-64_050922	85
LCS 240-526434/3	Lab Control Sample	86
MB 240-526434/4	Method Blank	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-526755/8
Matrix: Water
Analysis Batch: 526755

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/17/22 13:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/17/22 13:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 13:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/17/22 13:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/17/22 13:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/17/22 13:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/17/22 13:16*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*05/17/22 13:16*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*05/17/22 13:16*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*05/17/22 13:16*	*1*

Lab Sample ID: LCS 240-526755/5
Matrix: Water
Analysis Batch: 526755

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.1		ug/L		105	63 - 134
cis-1,2-Dichloroethene	20.0	19.6		ug/L		98	77 - 123
Tetrachloroethene	20.0	21.3		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	20.0		ug/L		100	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	17.5		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-166341-D-2 MS
Matrix: Water
Analysis Batch: 526755

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	66 - 128
Tetrachloroethene	1.0	U	20.0	20.3		ug/L		102	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	18.3		ug/L		92	61 - 124
Vinyl chloride	1.0	U	20.0	16.3		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166341-D-2 MS
Matrix: Water
Analysis Batch: 526755

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	91		73 - 120

Lab Sample ID: 240-166341-E-2 MSD
Matrix: Water
Analysis Batch: 526755

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		95	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	20.9		ug/L		104	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 136	3	15
Trichloroethene	1.0	U	20.0	18.8		ug/L		94	61 - 124	3	15
Vinyl chloride	1.0	U	20.0	17.0		ug/L		85	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		62 - 137
4-Bromofluorobenzene (Surr)	107		56 - 136
Toluene-d8 (Surr)	104		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: MB 240-526914/8
Matrix: Water
Analysis Batch: 526914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/18/22 11:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/18/22 11:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/18/22 11:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/18/22 11:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/18/22 11:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/18/22 11:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		62 - 137		05/18/22 11:57	1
4-Bromofluorobenzene (Surr)	101		56 - 136		05/18/22 11:57	1
Toluene-d8 (Surr)	103		78 - 122		05/18/22 11:57	1
Dibromofluoromethane (Surr)	91		73 - 120		05/18/22 11:57	1

Lab Sample ID: LCS 240-526914/5
Matrix: Water
Analysis Batch: 526914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	77 - 123
Tetrachloroethene	20.0	20.7		ug/L		104	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	19.1		ug/L		95	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-526914/5
Matrix: Water
Analysis Batch: 526914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	16.5		ug/L		82	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-166357-E-1 MSD
Matrix: Water
Analysis Batch: 526914

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.5		ug/L		97	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		94	66 - 128	1	14
Tetrachloroethene	1.0	U	20.0	20.6		ug/L		103	62 - 131	3	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.2		ug/L		96	56 - 136	0	15
Trichloroethene	1.0	U	20.0	18.7		ug/L		93	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	15.8		ug/L		79	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-166357-F-1 MS
Matrix: Water
Analysis Batch: 526914

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		95	66 - 128		
Tetrachloroethene	1.0	U	20.0	21.2		ug/L		106	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		96	56 - 136		
Trichloroethene	1.0	U	20.0	18.7		ug/L		94	61 - 124		
Vinyl chloride	1.0	U	20.0	16.4		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-526434/4
Matrix: Water
Analysis Batch: 526434

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/13/22 20:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*05/13/22 20:29*	*1*

Lab Sample ID: LCS 240-526434/3
Matrix: Water
Analysis Batch: 526434

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.4		ug/L		104	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-166341-G-2 MS
Matrix: Water
Analysis Batch: 526434

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-166341-M-2 MSD
Matrix: Water
Analysis Batch: 526434

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	7	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

GC/MS VOA

Analysis Batch: 526434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166343-2	MW-18_050922	Total/NA	Water	8260D SIM	
240-166343-3	MW-220S_050922	Total/NA	Water	8260D SIM	
240-166343-4	MW-69_050922	Total/NA	Water	8260D SIM	
240-166343-5	MW-64_050922	Total/NA	Water	8260D SIM	
MB 240-526434/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-526434/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166341-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166341-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 526755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166343-1	TRIP BLANK_65	Total/NA	Water	8260D	
240-166343-2	MW-18_050922	Total/NA	Water	8260D	
240-166343-3	MW-220S_050922	Total/NA	Water	8260D	
240-166343-4	MW-69_050922	Total/NA	Water	8260D	
MB 240-526755/8	Method Blank	Total/NA	Water	8260D	
LCS 240-526755/5	Lab Control Sample	Total/NA	Water	8260D	
240-166341-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-166341-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 526914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166343-5	MW-64_050922	Total/NA	Water	8260D	
MB 240-526914/8	Method Blank	Total/NA	Water	8260D	
LCS 240-526914/5	Lab Control Sample	Total/NA	Water	8260D	
240-166357-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-166357-F-1 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Client Sample ID: TRIP BLANK_65
Date Collected: 05/09/22 00:00
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	526755	05/17/22 18:07	TJL1	TAL CAN

Client Sample ID: MW-18_050922
Date Collected: 05/09/22 10:20
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	526755	05/17/22 18:29	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	526434	05/13/22 23:16	CS	TAL CAN

Client Sample ID: MW-220S_050922
Date Collected: 05/09/22 11:19
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	526755	05/17/22 18:52	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	526434	05/13/22 23:40	CS	TAL CAN

Client Sample ID: MW-69_050922
Date Collected: 05/09/22 12:36
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	526755	05/17/22 19:14	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	526434	05/14/22 00:04	CS	TAL CAN

Client Sample ID: MW-64_050922
Date Collected: 05/09/22 13:45
Date Received: 05/11/22 08:00

Lab Sample ID: 240-166343-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	526914	05/18/22 12:19	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	526434	05/14/22 00:28	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166343-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

0.3/0.3

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Xenia Chan	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240	Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_65	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-18_050922	5/9/22	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-220S_050922	5/9/22	1119		6						6					N	G	X	X	X	X	X	X	X	
MW-69_050922	5/9/22	1236		6						6					N	G	X	X	X	X	X	X	X	
MW-64_050922	5/9/22	1345		6						6					N	G	X	X	X	X	X	X	X	

240-166343 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sampl: ☐ Return to Client ☑ Disposal By Lab

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	5/9/22 1445	Non Cold Storage	Arcadis	5/9/22 1445
	ARCADIS	5/10/22 1017			5/10/22 1017
		5/10/22 1045	Received in Laboratory by:	LEETNC	5-11-22 0800

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5/25/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 166343
Canton Facility

Client Arcadis Site Name ~~Livonia~~ LTP

Cooler Received on 5-11-22 Opened on 5-11-22

Cooler unpacked by: Me

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp. 0.3 °C Corrected Cooler Temp. 0.3 °C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC157842
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

DATA VERIFICATION REPORT

May 25, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166343-1
Sample date: 2022-05-09
Report received by CADENA: 2022-05-25
Initial Data Verification completed by CADENA: 2022-05-25
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166343-1

	Sample Name:	TRIP BLANK_65				MW-18_050922				MW-220S_050922				MW-69_050922				MW-64_050922			
	Lab Sample ID:	2401663431				2401663432				2401663433				2401663434				2401663435			
	Sample Date:	5/9/2022				5/9/2022				5/9/2022				5/9/2022				5/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.65	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.5	1.0	ug/l	---	1.9	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	5.0	2.0	ug/l	---	1.1	2.0	ug/l	J

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166501-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
5/26/2022 1:52:34 PM
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LINKS
Review your project results through my EOL
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Job ID: 240-166501-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166501-1

Comments
No additional comments.

Receipt
The samples were received on 5/12/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 4.0º C and 4.0º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166501-1	TRIP BLANK_79	Water	05/10/22 00:00	05/12/22 08:00
240-166501-2	MW-62_051022	Water	05/10/22 09:59	05/12/22 08:00
240-166501-3	MW-50_051022	Water	05/10/22 11:29	05/12/22 08:00
240-166501-4	MW-48R_051022	Water	05/10/22 13:04	05/12/22 08:00
240-166501-5	MW-63_051022	Water	05/10/22 14:28	05/12/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Client Sample ID: TRIP BLANK_79 — Lab Sample ID: 240-166501-1

No Detections.

Client Sample ID: MW-62_051022 — Lab Sample ID: 240-166501-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.7		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.66	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-50_051022 — Lab Sample ID: 240-166501-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	6.6		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	190		7.1	3.2	ug/L	7.143		8260D	Total/NA

Client Sample ID: MW-48R_051022 — Lab Sample ID: 240-166501-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	12		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-63_051022 — Lab Sample ID: 240-166501-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Client Sample ID: TRIP BLANK_79

Date Collected: 05/10/22 00:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 12:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 12:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 12:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 12:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 12:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 12:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/20/22 12:21*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*05/20/22 12:21*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*05/20/22 12:21*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*05/20/22 12:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Client Sample ID: MW-62_051022
Date Collected: 05/10/22 09:59
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.7**		2.0	0.86	ug/L			05/16/22 23:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*05/16/22 23:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 19:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 19:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 19:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 19:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 19:14	1
Vinyl chloride	**0.66**	**J**	1.0	0.45	ug/L			05/20/22 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*05/20/22 19:14*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*05/20/22 19:14*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/20/22 19:14*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/20/22 19:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Client Sample ID: MW-50_051022
Date Collected: 05/10/22 11:29
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.4**	**J**	2.0	0.86	ug/L			05/17/22 00:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/17/22 00:09*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 19:40	1
cis-1,2-Dichloroethene	**6.6**		1.0	0.46	ug/L			05/20/22 19:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 19:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 19:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 19:40	1
Vinyl chloride	**190**		7.1	3.2	ug/L			05/23/22 17:10	7.143

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*05/20/22 19:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*05/23/22 17:10*	*7.143*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*05/20/22 19:40*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*05/23/22 17:10*	*7.143*
Toluene-d8 (Surr)	*97*		*78 - 122*		*05/20/22 19:40*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*05/23/22 17:10*	*7.143*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/20/22 19:40*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*05/23/22 17:10*	*7.143*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Client Sample ID: MW-48R_051022

Date Collected: 05/10/22 13:04
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	12		2.0	0.86	ug/L			05/17/22 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/17/22 00:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/23/22 14:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/23/22 14:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 14:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/23/22 14:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 14:48	1
Vinyl chloride	2.2		1.0	0.45	ug/L			05/23/22 14:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*05/23/22 14:48*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*05/23/22 14:48*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*05/23/22 14:48*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*05/23/22 14:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Client Sample ID: MW-63_051022

Date Collected: 05/10/22 14:28
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-5

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/16/22 21:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*05/16/22 21:22*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 20:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 20:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 20:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 20:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 20:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 20:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*05/20/22 20:29*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*05/20/22 20:29*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*05/20/22 20:29*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*05/20/22 20:29*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166501-1	TRIP BLANK_79	101	86	94	102
240-166501-2	MW-62_051022	110	87	98	100
240-166501-3	MW-50_051022	107	85	97	100
240-166501-3	MW-50_051022	107	108	108	114
240-166501-3 MS	MW-50_051022	96	106	109	103
240-166501-3 MSD	MW-50_051022	99	108	107	103
240-166501-4	MW-48R_051022	109	107	105	113
240-166501-5	MW-63_051022	110	84	97	99
240-166501-5 MS	MW-63-MS_051022	96	103	103	90
240-166501-5 MSD	MW-63-MSD_051022	96	102	103	90
240-166502-L-5 MS	Matrix Spike	99	94	98	106
240-166502-R-5 MSD	Matrix Spike Duplicate	99	96	98	106
LCS 240-527335/5	Lab Control Sample	93	104	100	90
LCS 240-527337/4	Lab Control Sample	98	98	98	106
LCS 240-527500/5	Lab Control Sample	96	107	108	102
MB 240-527335/7	Method Blank	102	86	96	93
MB 240-527337/6	Method Blank	102	87	98	104
MB 240-527500/7	Method Blank	106	107	109	112

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166501-2	MW-62_051022	83
240-166501-3	MW-50_051022	84
240-166501-4	MW-48R_051022	84
240-166501-5	MW-63_051022	81
240-166501-5 MS	MW-63-MS_051022	83
240-166501-5 MSD	MW-63-MSD_051022	82
LCS 240-526644/3	Lab Control Sample	84
MB 240-526644/4	Method Blank	83

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527335/7
Matrix: Water
Analysis Batch: 527335

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 12:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 12:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 12:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 12:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 12:08	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 12:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*05/20/22 12:08*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*05/20/22 12:08*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*05/20/22 12:08*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*05/20/22 12:08*	*1*

Lab Sample ID: LCS 240-527335/5
Matrix: Water
Analysis Batch: 527335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.4		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.0		ug/L		88	77 - 123
Tetrachloroethene	25.0	24.9		ug/L		100	76 - 123
trans-1,2-Dichloroethene	25.0	22.2		ug/L		89	75 - 124
Trichloroethene	25.0	22.3		ug/L		89	70 - 122
Vinyl chloride	25.0	23.1		ug/L		92	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-166501-5 MS
Matrix: Water
Analysis Batch: 527335

Client Sample ID: MW-63-MS_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	25.0	22.2		ug/L		89	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	20.8		ug/L		83	61 - 124
Vinyl chloride	1.0	U	25.0	23.1		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166501-5 MS
Matrix: Water
Analysis Batch: 527335

Client Sample ID: MW-63-MS_051022
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: 240-166501-5 MSD
Matrix: Water
Analysis Batch: 527335

Client Sample ID: MW-63-MSD_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	21.1		ug/L		84	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	56 - 136	6	15
Trichloroethene	1.0	U	25.0	20.0		ug/L		80	61 - 124	4	15
Vinyl chloride	1.0	U	25.0	22.8		ug/L		91	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	103		78 - 122
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: MB 240-527337/6
Matrix: Water
Analysis Batch: 527337

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 11:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 11:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 11:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 11:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 11:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 11:56	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		62 - 137		05/20/22 11:56	1
4-Bromofluorobenzene (Surr)	87		56 - 136		05/20/22 11:56	1
Toluene-d8 (Surr)	98		78 - 122		05/20/22 11:56	1
Dibromofluoromethane (Surr)	104		73 - 120		05/20/22 11:56	1

Lab Sample ID: LCS 240-527337/4
Matrix: Water
Analysis Batch: 527337

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		111	63 - 134
cis-1,2-Dichloroethene	25.0	26.7		ug/L		107	77 - 123
Tetrachloroethene	25.0	26.0		ug/L		104	76 - 123
trans-1,2-Dichloroethene	25.0	27.0		ug/L		108	75 - 124
Trichloroethene	25.0	26.7		ug/L		107	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-527337/4
Matrix: Water
Analysis Batch: 527337

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	11.4		ug/L		91	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-166502-L-5 MS
Matrix: Water
Analysis Batch: 527337

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	26.6		ug/L		106	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	26.3		ug/L		105	66 - 128		
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 136		
Trichloroethene	1.0	U	25.0	25.7		ug/L		103	61 - 124		
Vinyl chloride	1.0	U	25.0	21.6		ug/L		86	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-166502-R-5 MSD
Matrix: Water
Analysis Batch: 527337

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.7		ug/L		119	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.3		ug/L		105	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.9		ug/L		107	56 - 136	1	15
Trichloroethene	1.0	U	25.0	25.6		ug/L		102	61 - 124	0	15
Vinyl chloride	1.0	U	25.0	21.5		ug/L		86	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-527500/7
Matrix: Water
Analysis Batch: 527500

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/23/22 13:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/23/22 13:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 13:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/23/22 13:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 13:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/23/22 13:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*05/23/22 13:13*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*05/23/22 13:13*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*05/23/22 13:13*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*05/23/22 13:13*	*1*

Lab Sample ID: LCS 240-527500/5
Matrix: Water
Analysis Batch: 527500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.1		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	77 - 123
Tetrachloroethene	25.0	26.2		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	24.5		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-166501-3 MS
Matrix: Water
Analysis Batch: 527500

Client Sample ID: MW-50_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	190		179	332		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166501-3 MSD
Matrix: Water
Analysis Batch: 527500

Client Sample ID: MW-50_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	190		179	346		ug/L		89	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-526644/4
Matrix: Water
Analysis Batch: 526644

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/16/22 20:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*05/16/22 20:34*	*1*

Lab Sample ID: LCS 240-526644/3
Matrix: Water
Analysis Batch: 526644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.6		ug/L		106	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-166501-5 MS
Matrix: Water
Analysis Batch: 526644

Client Sample ID: MW-63-MS_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-166501-5 MSD
Matrix: Water
Analysis Batch: 526644

Client Sample ID: MW-63-MSD_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153	7	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-166501-5 MSD
Matrix: Water
Analysis Batch: 526644

Client Sample ID: MW-63-MSD_051022
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

GC/MS VOA

Analysis Batch: 526644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166501-2	MW-62_051022	Total/NA	Water	8260D SIM	
240-166501-3	MW-50_051022	Total/NA	Water	8260D SIM	
240-166501-4	MW-48R_051022	Total/NA	Water	8260D SIM	
240-166501-5	MW-63_051022	Total/NA	Water	8260D SIM	
MB 240-526644/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-526644/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166501-5 MS	MW-63-MS_051022	Total/NA	Water	8260D SIM	
240-166501-5 MSD	MW-63-MSD_051022	Total/NA	Water	8260D SIM	

Analysis Batch: 527335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166501-2	MW-62_051022	Total/NA	Water	8260D	
240-166501-3	MW-50_051022	Total/NA	Water	8260D	
240-166501-5	MW-63_051022	Total/NA	Water	8260D	
MB 240-527335/7	Method Blank	Total/NA	Water	8260D	
LCS 240-527335/5	Lab Control Sample	Total/NA	Water	8260D	
240-166501-5 MS	MW-63-MS_051022	Total/NA	Water	8260D	
240-166501-5 MSD	MW-63-MSD_051022	Total/NA	Water	8260D	

Analysis Batch: 527337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166501-1	TRIP BLANK_79	Total/NA	Water	8260D	
MB 240-527337/6	Method Blank	Total/NA	Water	8260D	
LCS 240-527337/4	Lab Control Sample	Total/NA	Water	8260D	
240-166502-L-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-166502-R-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 527500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166501-3	MW-50_051022	Total/NA	Water	8260D	
240-166501-4	MW-48R_051022	Total/NA	Water	8260D	
MB 240-527500/7	Method Blank	Total/NA	Water	8260D	
LCS 240-527500/5	Lab Control Sample	Total/NA	Water	8260D	
240-166501-3 MS	MW-50_051022	Total/NA	Water	8260D	
240-166501-3 MSD	MW-50_051022	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Client Sample ID: TRIP BLANK_79
Date Collected: 05/10/22 00:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527337	05/20/22 12:21	SAM	TAL CAN

Client Sample ID: MW-62_051022
Date Collected: 05/10/22 09:59
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527335	05/20/22 19:14	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/16/22 23:45	CS	TAL CAN

Client Sample ID: MW-50_051022
Date Collected: 05/10/22 11:29
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527335	05/20/22 19:40	SAM	TAL CAN
Total/NA	Analysis	8260D		7.143	527500	05/23/22 17:10	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/17/22 00:09	CS	TAL CAN

Client Sample ID: MW-48R_051022
Date Collected: 05/10/22 13:04
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527500	05/23/22 14:48	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/17/22 00:33	CS	TAL CAN

Client Sample ID: MW-63_051022
Date Collected: 05/10/22 14:28
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166501-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527335	05/20/22 20:29	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/16/22 21:22	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166501-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	05-24-22
Oregon	NELAP	4062	05-24-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Xenia Chan	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac / NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_79	—	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-62_051022	5/10/22	959		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-50_051022	5/10/22	1129		6						6					N	G	X	X	X	X	X	X	X	
MW-48R_051022	5/10/22	1304		6						6					N	G	X	X	X	X	X	X	X	
MW-63_051022	5/10/22	1428		6						6					N	G	X	X	X	X	X	X	X	
MW-63-MS_051022	5/10/22	1428		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-63-MSD_051022	5/10/22	1428		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sam: ☐ Return to Client ☑ Disposal By Lab

240-166501 Chain of Custody

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by:	Arcadis	5/10/22 1530	Received by: Non Cold_Storage	Arcadis	5/10/22 1530
Relinquished by:	ARCADIS	5/11/22 0930	Received by:		5/11/22 0930
Relinquished by:		5/11/22 1011	Received in Laboratory by:	EETNC	5-12-22 0800

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5/26/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 166501
Canton Facility

Client Arcadis Site Name Ford - LTP
Cooler Received on 5-12-22 Opened on 5-12-22
Cooler unpacked by: DMC
FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
-Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
-Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page
Samples processed by:

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login #: 166501

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1A) Client Box Other	(IR-13) IR-15	4.0	4.0	(Wet Ice) Blue Ice Dry Ice Water None
(1A) Client Box Other	(IR-13) IR-15	4.0	4.0	(Wet Ice) Blue Ice Dry Ice Water None
1A Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

May 26, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166501-1
Sample date: 2022-05-10
Report received by CADENA: 2022-05-26
Initial Data Verification completed by CADENA: 2022-05-26
Number of Samples:5
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166501-1

		Sample Name:	TRIP BLANK_79				MW-62_051022				MW-50_051022				MW-48R_051022				MW-63_051022			
		Lab Sample ID:	2401665011				2401665012				2401665013				2401665014				2401665015			
		Sample Date:	5/10/2022				5/10/2022				5/10/2022				5/10/2022				5/10/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
OSW-8260D																						
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	6.6	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	0.66	1.0	ug/l	J	190	7.1	ug/l	---	2.2	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																						
1,4-Dioxane	123-91-1						2.7	2.0	ug/l	---	1.4	2.0	ug/l	J	12	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166505-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
5/26/2022 2:15:02 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Job ID: 240-166505-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166505-1

Comments
No additional comments.

Receipt
The samples were received on 5/12/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 4.0º C and 4.0º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166505-1	TRIP BLANK_76	Water	05/10/22 00:00	05/12/22 08:00
240-166505-2	MW-14_051022	Water	05/10/22 10:45	05/12/22 08:00
240-166505-3	MW-37_051022	Water	05/10/22 12:30	05/12/22 08:00
240-166505-4	MW-38_051022	Water	05/10/22 14:00	05/12/22 08:00
240-166505-5	MW-219S_051022	Water	05/10/22 15:30	05/12/22 08:00
240-166505-6	MW-33_051022	Water	05/10/22 17:00	05/12/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: TRIP BLANK_76 — Lab Sample ID: 240-166505-1

No Detections.

Client Sample ID: MW-14_051022 — Lab Sample ID: 240-166505-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.86	J	1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-37_051022 — Lab Sample ID: 240-166505-3

No Detections.

Client Sample ID: MW-38_051022 — Lab Sample ID: 240-166505-4

No Detections.

Client Sample ID: MW-219S_051022 — Lab Sample ID: 240-166505-5

No Detections.

Client Sample ID: MW-33_051022 — Lab Sample ID: 240-166505-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: TRIP BLANK_76
Date Collected: 05/10/22 00:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 13:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 13:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 13:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 13:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/20/22 13:36*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*05/20/22 13:36*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*05/20/22 13:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*05/20/22 13:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: MW-14_051022

Date Collected: 05/10/22 10:45
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 03:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/17/22 03:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 17:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 17:22	1
Trichloroethene	**0.86**	**J**	1.0	0.44	ug/L			05/20/22 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/20/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*05/20/22 17:22*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/20/22 17:22*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*05/20/22 17:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: MW-37_051022

Date Collected: 05/10/22 12:30
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U F1	2.0	0.86	ug/L			05/17/22 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*05/17/22 20:51*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 17:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 17:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 17:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 17:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 17:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/20/22 17:47*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*05/20/22 17:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*05/20/22 17:47*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*05/20/22 17:47*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: MW-38_051022

Date Collected: 05/10/22 14:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 04:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/17/22 04:06*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 18:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 18:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 18:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/20/22 18:12*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*05/20/22 18:12*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*05/20/22 18:12*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*05/20/22 18:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: MW-219S_051022
Date Collected: 05/10/22 15:30
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 04:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*05/17/22 04:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 18:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 18:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 18:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*05/20/22 18:37*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*05/20/22 18:37*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*05/20/22 18:37*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*05/20/22 18:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: MW-33_051022
Date Collected: 05/10/22 17:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 04:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/17/22 04:54*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 19:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 19:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 19:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 19:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 19:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*05/20/22 19:02*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*05/20/22 19:02*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/20/22 19:02*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*05/20/22 19:02*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166505-1	TRIP BLANK_76	101	86	97	103
240-166505-2	MW-14_051022	105	85	98	106
240-166505-3	MW-37_051022	101	83	97	105
240-166505-3 MS	MW-37-MS_051022	102	96	99	107
240-166505-3 MSD	MW-37-MSD_051022	100	96	98	107
240-166505-4	MW-38_051022	101	86	99	104
240-166505-5	MW-219S_051022	104	85	97	107
240-166505-6	MW-33_051022	104	86	98	107
LCS 240-527337/4	Lab Control Sample	98	98	98	106
MB 240-527337/6	Method Blank	102	87	98	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166502-I-5 MS	Matrix Spike	86
240-166502-O-5 MSD	Matrix Spike Duplicate	89
240-166505-2	MW-14_051022	84
240-166505-3	MW-37_051022	105
240-166505-3 MS	MW-37-MS_051022	105
240-166505-3 MSD	MW-37-MSD_051022	105
240-166505-4	MW-38_051022	84
240-166505-5	MW-219S_051022	88
240-166505-6	MW-33_051022	84
LCS 240-526644/3	Lab Control Sample	84
LCS 240-526826/3	Lab Control Sample	106
MB 240-526644/4	Method Blank	83
MB 240-526826/4	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527337/6
Matrix: Water
Analysis Batch: 527337

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 11:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 11:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 11:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 11:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 11:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 11:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*05/20/22 11:56*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*05/20/22 11:56*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/20/22 11:56*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*05/20/22 11:56*	*1*

Lab Sample ID: LCS 240-527337/4
Matrix: Water
Analysis Batch: 527337

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.9		ug/L		111	63 - 134
cis-1,2-Dichloroethene	25.0	26.7		ug/L		107	77 - 123
Tetrachloroethene	25.0	26.0		ug/L		104	76 - 123
trans-1,2-Dichloroethene	25.0	27.0		ug/L		108	75 - 124
Trichloroethene	25.0	26.7		ug/L		107	70 - 122
Vinyl chloride	12.5	11.4		ug/L		91	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-166505-3 MS
Matrix: Water
Analysis Batch: 527337

Client Sample ID: MW-37-MS_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.5		ug/L		106	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	27.0		ug/L		108	66 - 128
Tetrachloroethene	1.0	U	25.0	25.8		ug/L		103	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	27.4		ug/L		110	56 - 136
Trichloroethene	1.0	U	25.0	26.1		ug/L		104	61 - 124
Vinyl chloride	1.0	U	25.0	22.4		ug/L		90	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166505-3 MS
Matrix: Water
Analysis Batch: 527337

Client Sample ID: MW-37-MS_051022
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-166505-3 MSD
Matrix: Water
Analysis Batch: 527337

Client Sample ID: MW-37-MSD_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.2		ug/L		117	56 - 135	10	26
cis-1,2-Dichloroethene	1.0	U	25.0	26.6		ug/L		106	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	24.6		ug/L		98	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.6		ug/L		107	56 - 136	3	15
Trichloroethene	1.0	U	25.0	25.9		ug/L		104	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	22.7		ug/L		91	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-526644/4
Matrix: Water
Analysis Batch: 526644

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/16/22 20:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*05/16/22 20:34*	*1*

Lab Sample ID: LCS 240-526644/3
Matrix: Water
Analysis Batch: 526644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.6		ug/L		106	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*

Lab Sample ID: 240-166502-I-5 MS
Matrix: Water
Analysis Batch: 526644

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-166502-O-5 MSD
Matrix: Water
Analysis Batch: 526644

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: MB 240-526826/4
Matrix: Water
Analysis Batch: 526826

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 20:01	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*05/17/22 20:01*	*1*

Lab Sample ID: LCS 240-526826/3
Matrix: Water
Analysis Batch: 526826

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.73		ug/L		97	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-166505-3 MS
Matrix: Water
Analysis Batch: 526826

Client Sample ID: MW-37-MS_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U F1	10.0	9.65		ug/L		97	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-166505-3 MSD
Matrix: Water
Analysis Batch: 526826

Client Sample ID: MW-37-MSD_051022
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U F1	10.0	10.2		ug/L		102	51 - 153	6	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-166505-3 MSD
Matrix: Water
Analysis Batch: 526826

Client Sample ID: MW-37-MSD_051022
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

GC/MS VOA

Analysis Batch: 526644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166505-2	MW-14_051022	Total/NA	Water	8260D SIM	
240-166505-4	MW-38_051022	Total/NA	Water	8260D SIM	
240-166505-5	MW-219S_051022	Total/NA	Water	8260D SIM	
240-166505-6	MW-33_051022	Total/NA	Water	8260D SIM	
MB 240-526644/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-526644/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166502-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166502-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 526826

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166505-3	MW-37_051022	Total/NA	Water	8260D SIM	
MB 240-526826/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-526826/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166505-3 MS	MW-37-MS_051022	Total/NA	Water	8260D SIM	
240-166505-3 MSD	MW-37-MSD_051022	Total/NA	Water	8260D SIM	

Analysis Batch: 527337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166505-1	TRIP BLANK_76	Total/NA	Water	8260D	
240-166505-2	MW-14_051022	Total/NA	Water	8260D	
240-166505-3	MW-37_051022	Total/NA	Water	8260D	
240-166505-4	MW-38_051022	Total/NA	Water	8260D	
240-166505-5	MW-219S_051022	Total/NA	Water	8260D	
240-166505-6	MW-33_051022	Total/NA	Water	8260D	
MB 240-527337/6	Method Blank	Total/NA	Water	8260D	
LCS 240-527337/4	Lab Control Sample	Total/NA	Water	8260D	
240-166505-3 MS	MW-37-MS_051022	Total/NA	Water	8260D	
240-166505-3 MSD	MW-37-MSD_051022	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Client Sample ID: TRIP BLANK_76
Date Collected: 05/10/22 00:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527337	05/20/22 13:36	SAM	TAL CAN

Client Sample ID: MW-14_051022
Date Collected: 05/10/22 10:45
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527337	05/20/22 17:22	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/17/22 03:42	CS	TAL CAN

Client Sample ID: MW-37_051022
Date Collected: 05/10/22 12:30
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527337	05/20/22 17:47	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526826	05/17/22 20:51	CS	TAL CAN

Client Sample ID: MW-38_051022
Date Collected: 05/10/22 14:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527337	05/20/22 18:12	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/17/22 04:06	CS	TAL CAN

Client Sample ID: MW-219S_051022
Date Collected: 05/10/22 15:30
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527337	05/20/22 18:37	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/17/22 04:30	CS	TAL CAN

Client Sample ID: MW-33_051022
Date Collected: 05/10/22 17:00
Date Received: 05/12/22 08:00

Lab Sample ID: 240-166505-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527337	05/20/22 19:02	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526644	05/17/22 04:54	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166505-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	05-24-22
Oregon	NELAP	4062	05-24-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Ellen Redner	TAT if different from below: 10 day; 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_76	5/10/22	—		1						1					N	G	X	X	X	X	X	X	X	1 Trip Blank
MW-14_051022	5/10/22	1045		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-37_051022	5/10/22	1230		6						6					N	G	X	X	X	X	X	X	X	~~RUN MS/MSD~~ ER
MW-37-MS_051022	5/10/22	1230		6						6					N	G	X	X	X	X	X	X	X	RUN MS/MSD
MW-37-MSD_051022	5/10/22	1230		6						6					N	G	X	X	X	X	X	X	X	RUN MS/MSD
MW-38_051022	5/10/22	1400		6						6					N	G	X	X	X	X	X	X	X	
MW-2195_051022	5/10/22	1530		6						6					N	G	X	X	X	X	X	X	X	
MW-33_051022	5/10/22	1700		6						6					N	G	X	X	X	X	X	X	X	
																								5/10/22

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if): Return to Client; Disposal By

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

240-166505 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ellen Redner	Arcadis	5/10/22 @ 1830	Novi Cold Storage	ARCADIS	5/10/22 @ 1830
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	5/11/22 0900		EET	5/11/22 0900
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EET	5/11/22 1063		EETNC	5-12-22 0800

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Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 166505
Canton Facility

Client Arcadis Site Name Ford - LTP
Cooler Received on 5-12-22 Opened on 5-12-22
FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other
Cooler unpacked by: (initials)

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 166505

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	4.0	4.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	4.0	4.0	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

May 26, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166505-1
Sample date: 2022-05-10
Report received by CADENA: 2022-05-26
Initial Data Verification completed by CADENA: 2022-05-26
Number of Samples:6
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166505-1

		Sample Name:	TRIP BLANK_76				MW-14_051022				MW-37_051022				MW-38_051022				MW-219S_051022				MW-33_051022			
		Lab Sample ID:	2401665051				2401665052				2401665053				2401665054				2401665055				2401665056			
		Sample Date:	5/10/2022				5/10/2022				5/10/2022				5/10/2022				5/10/2022				5/10/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
	OSW-8260D																									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	0.86	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																									
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166651-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Patrick O'Meara

Authorized for release by:
5/26/2022 10:37:03 PM
Patrick O'Meara, Manager of Project Management
(330)966-5725
Patrick.O'Meara@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

Review your project results through myEOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Job ID: 240-166651-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166651-1

Comments
No additional comments.

Receipt
The samples were received on 5/14/2022 @ 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.0º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166651-1	TRIP BLANK_75	Water	05/11/22 00:00	05/14/22 08:00
240-166651-2	MW-39_051122	Water	05/11/22 10:35	05/14/22 08:00
240-166651-3	MW-218S_051122	Water	05/11/22 12:00	05/14/22 08:00
240-166651-4	MW-32_051122	Water	05/11/22 13:55	05/14/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Client Sample ID: TRIP BLANK_75 — Lab Sample ID: 240-166651-1

No Detections.

Client Sample ID: MW-39_051122 — Lab Sample ID: 240-166651-2

No Detections.

Client Sample ID: MW-218S_051122 — Lab Sample ID: 240-166651-3

No Detections.

Client Sample ID: MW-32_051122 — Lab Sample ID: 240-166651-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Client Sample ID: TRIP BLANK_75
Date Collected: 05/11/22 00:00
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/23/22 13:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/23/22 13:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 13:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/23/22 13:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 13:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/23/22 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/23/22 13:37*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*05/23/22 13:37*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*05/23/22 13:37*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*05/23/22 13:37*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Client Sample ID: MW-39_051122

Date Collected: 05/11/22 10:35
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/18/22 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*05/18/22 03:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 18:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 18:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 18:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 18:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*05/20/22 18:20*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*05/20/22 18:20*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*05/20/22 18:20*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*05/20/22 18:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Client Sample ID: MW-218S_051122

Date Collected: 05/11/22 12:00
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/18/22 03:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*05/18/22 03:54*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/23/22 14:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/23/22 14:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 14:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/23/22 14:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 14:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/23/22 14:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*05/23/22 14:01*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*05/23/22 14:01*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*05/23/22 14:01*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*05/23/22 14:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Client Sample ID: MW-32_051122
Date Collected: 05/11/22 13:55
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/18/22 04:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*05/18/22 04:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/23/22 14:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/23/22 14:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 14:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/23/22 14:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 14:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/23/22 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*05/23/22 14:25*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*05/23/22 14:25*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*05/23/22 14:25*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*05/23/22 14:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166395-F-18 MS	Matrix Spike	96	106	108	100
240-166395-I-18 MSD	Matrix Spike Duplicate	95	101	105	98
240-166501-B-3 MS	Matrix Spike	96	106	109	103
240-166501-B-3 MSD	Matrix Spike Duplicate	99	108	107	103
240-166651-1	TRIP BLANK_75	105	107	107	112
240-166651-2	MW-39_051122	109	108	106	112
240-166651-3	MW-218S_051122	107	109	108	113
240-166651-4	MW-32_051122	106	107	108	113
LCS 240-527288/5	Lab Control Sample	94	106	110	103
LCS 240-527500/5	Lab Control Sample	96	107	108	102
MB 240-527288/7	Method Blank	107	108	108	113
MB 240-527500/7	Method Blank	106	107	109	112

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166505-H-3 MS	Matrix Spike	105
240-166505-N-3 MSD	Matrix Spike Duplicate	105
240-166651-2	MW-39_051122	100
240-166651-3	MW-218S_051122	98
240-166651-4	MW-32_051122	99
LCS 240-526826/3	Lab Control Sample	106
MB 240-526826/4	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527288/7
Matrix: Water
Analysis Batch: 527288

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/20/22 11:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/20/22 11:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 11:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/20/22 11:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/20/22 11:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/20/22 11:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*05/20/22 11:36*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*05/20/22 11:36*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*05/20/22 11:36*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*05/20/22 11:36*	*1*

Lab Sample ID: LCS 240-527288/5
Matrix: Water
Analysis Batch: 527288

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.0		ug/L		104	63 - 134
cis-1,2-Dichloroethene	25.0	24.8		ug/L		99	77 - 123
Tetrachloroethene	25.0	26.9		ug/L		107	76 - 123
trans-1,2-Dichloroethene	25.0	25.1		ug/L		101	75 - 124
Trichloroethene	25.0	25.6		ug/L		102	70 - 122
Vinyl chloride	25.0	24.6		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-166395-F-18 MS
Matrix: Water
Analysis Batch: 527288

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	6.1		25.0	28.4		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.4		25.0	23.6		ug/L		89	66 - 128
Tetrachloroethene	4.8		25.0	28.4		ug/L		94	62 - 131
trans-1,2-Dichloroethene	0.91	J	25.0	23.3		ug/L		90	56 - 136
Trichloroethene	1.3		25.0	24.6		ug/L		93	61 - 124
Vinyl chloride	3.0		25.0	25.9		ug/L		91	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166395-F-18 MS
Matrix: Water
Analysis Batch: 527288

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-166395-I-18 MSD
Matrix: Water
Analysis Batch: 527288

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	6.1		25.0	27.5		ug/L		86	56 - 135	3	26
cis-1,2-Dichloroethene	1.4		25.0	23.3		ug/L		88	66 - 128	1	14
Tetrachloroethene	4.8		25.0	26.6		ug/L		87	62 - 131	6	20
trans-1,2-Dichloroethene	0.91	J	25.0	22.7		ug/L		87	56 - 136	3	15
Trichloroethene	1.3		25.0	24.1		ug/L		91	61 - 124	2	15
Vinyl chloride	3.0		25.0	25.1		ug/L		88	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: MB 240-527500/7
Matrix: Water
Analysis Batch: 527500

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/23/22 13:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/23/22 13:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 13:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/23/22 13:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/23/22 13:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/23/22 13:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*05/23/22 13:13*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*05/23/22 13:13*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*05/23/22 13:13*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*05/23/22 13:13*	*1*

Lab Sample ID: LCS 240-527500/5
Matrix: Water
Analysis Batch: 527500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.1		ug/L		101	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	77 - 123
Tetrachloroethene	25.0	26.2		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-527500/5
Matrix: Water
Analysis Batch: 527500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	24.5		ug/L		98	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*108*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-166501-B-3 MS
Matrix: Water
Analysis Batch: 527500

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	7.1	U	179	175		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	8.1		179	178		ug/L		95	66 - 128		
Tetrachloroethene	7.1	U	179	179		ug/L		100	62 - 131		
trans-1,2-Dichloroethene	7.1	U	179	170		ug/L		95	56 - 136		
Trichloroethene	7.1	U	179	172		ug/L		96	61 - 124		
Vinyl chloride	190		179	332		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Lab Sample ID: 240-166501-B-3 MSD
Matrix: Water
Analysis Batch: 527500

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	7.1	U	179	180		ug/L		101	56 - 135	3	26
cis-1,2-Dichloroethene	8.1		179	185		ug/L		99	66 - 128	4	14
Tetrachloroethene	7.1	U	179	177		ug/L		99	62 - 131	1	20
trans-1,2-Dichloroethene	7.1	U	179	173		ug/L		97	56 - 136	2	15
Trichloroethene	7.1	U	179	177		ug/L		99	61 - 124	3	15
Vinyl chloride	190		179	346		ug/L		89	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-526826/4
Matrix: Water
Analysis Batch: 526826

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/17/22 20:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*05/17/22 20:01*	*1*

Lab Sample ID: LCS 240-526826/3
Matrix: Water
Analysis Batch: 526826

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.73		ug/L		97	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-166505-H-3 MS
Matrix: Water
Analysis Batch: 526826

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U F1	10.0	9.65		ug/L		97	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: 240-166505-N-3 MSD
Matrix: Water
Analysis Batch: 526826

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U F1	10.0	10.2		ug/L		102	51 - 153	6	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

GC/MS VOA

Analysis Batch: 526826

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166651-2	MW-39_051122	Total/NA	Water	8260D SIM	
240-166651-3	MW-218S_051122	Total/NA	Water	8260D SIM	
240-166651-4	MW-32_051122	Total/NA	Water	8260D SIM	
MB 240-526826/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-526826/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166505-H-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166505-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 527288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166651-2	MW-39_051122	Total/NA	Water	8260D	
MB 240-527288/7	Method Blank	Total/NA	Water	8260D	
LCS 240-527288/5	Lab Control Sample	Total/NA	Water	8260D	
240-166395-F-18 MS	Matrix Spike	Total/NA	Water	8260D	
240-166395-I-18 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 527500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166651-1	TRIP BLANK_75	Total/NA	Water	8260D	
240-166651-3	MW-218S_051122	Total/NA	Water	8260D	
240-166651-4	MW-32_051122	Total/NA	Water	8260D	
MB 240-527500/7	Method Blank	Total/NA	Water	8260D	
LCS 240-527500/5	Lab Control Sample	Total/NA	Water	8260D	
240-166501-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-166501-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Client Sample ID: TRIP BLANK_75
Date Collected: 05/11/22 00:00
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527500	05/23/22 13:37	SAM	TAL CAN

Client Sample ID: MW-39_051122
Date Collected: 05/11/22 10:35
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527288	05/20/22 18:20	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526826	05/18/22 03:30	CS	TAL CAN

Client Sample ID: MW-218S_051122
Date Collected: 05/11/22 12:00
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527500	05/23/22 14:01	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526826	05/18/22 03:54	CS	TAL CAN

Client Sample ID: MW-32_051122
Date Collected: 05/11/22 13:55
Date Received: 05/14/22 08:00

Lab Sample ID: 240-166651-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527500	05/23/22 14:25	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	526826	05/18/22 04:19	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166651-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	05-24-22
Oregon	NELAP	4062	05-24-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	For lab use only
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Ellen Redner	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30080642.401.03	Shipping/Tracking No:			
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_75	5/11/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-39_051122	5/11/22	1035		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-218S_051122	5/11/22	1200		6						6					N	G	X	X	X	X	X	X	X	
MW-32_051122	5/11/22	1355		6						6					N	G	X	X	X	X	X	X	X	

5/11/22

240-166651 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ellen Redner	Arcadis	5/11/22 @ 1550	NDW cold storage	Arcadis	5/11/22 @ 1550
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	5/13/22 1250		EETA	5/13/22 1250
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	5/13/22 1256		EETNC	5-14-22 800

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5/26/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 166661
Canton Facility

Client Arcadis Site Name

Cooler Received on 5-14-22 Opened on 5-16-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other

Cooler unpacked by: Tony Boyd

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # A Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.0 °C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)? (Y) (Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. (Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

May 27, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166651-1
Sample date: 2022-05-11
Report received by CADENA: 2022-05-26
Initial Data Verification completed by CADENA: 2022-05-27
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC SIM QC batch MS/MSD recovery outliers were not determined using a client sample so qualification was not required based on these sample-specific QC outliers.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166651-1

		Sample Name:	TRIP BLANK_75				MW-39_051122				MW-218S_051122				MW-32_051122			
		Lab Sample ID:	2401666511				2401666512				2401666513				2401666514			
		Sample Date:	5/11/2022				5/11/2022				5/11/2022				5/11/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166736-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Patrick O'Meara

Authorized for release by:
5/27/2022 7:13:54 PM
Patrick O'Meara, Manager of Project Management
(330)966-5725
Patrick.O'Meara@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Job ID: 240-166736-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166736-1

Comments
No additional comments.

Receipt
The samples were received on 5/17/2022 @ 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.6º C and 2.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166736-1	TRIP BLANK_107	Water	05/13/22 00:00	05/17/22 09:30
240-166736-2	MW-67_051322	Water	05/13/22 10:20	05/17/22 09:30
240-166736-3	MW-54S_051322	Water	05/13/22 11:30	05/17/22 09:30
240-166736-4	MW-54_051322	Water	05/13/22 12:45	05/17/22 09:30
240-166736-5	MW-57_051322	Water	05/13/22 14:35	05/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Client Sample ID: TRIP BLANK_107 — Lab Sample ID: 240-166736-1

No Detections.

Client Sample ID: MW-67_051322 — Lab Sample ID: 240-166736-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.3		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.59	J	1.0	0.51	ug/L	1		8260D	Total/NA
Trichloroethene	52		1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-54S_051322 — Lab Sample ID: 240-166736-3

No Detections.

Client Sample ID: MW-54_051322 — Lab Sample ID: 240-166736-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.3	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.89	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-57_051322 — Lab Sample ID: 240-166736-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.98	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.77	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Client Sample ID: TRIP BLANK_107

Date Collected: 05/13/22 00:00
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166736-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 17:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/25/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*05/25/22 17:22*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*05/25/22 17:22*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*05/25/22 17:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Client Sample ID: MW-67_051322
Date Collected: 05/13/22 10:20
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166736-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 02:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*05/24/22 02:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 17:44	1
cis-1,2-Dichloroethene	**3.3**		1.0	0.46	ug/L			05/25/22 17:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 17:44	1
trans-1,2-Dichloroethene	**0.59**	**J**	1.0	0.51	ug/L			05/25/22 17:44	1
Trichloroethene	**52**		1.0	0.44	ug/L			05/25/22 17:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 17:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/25/22 17:44*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*05/25/22 17:44*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*05/25/22 17:44*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*05/25/22 17:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Client Sample ID: MW-54S_051322

Date Collected: 05/13/22 11:30
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166736-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 02:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*05/24/22 02:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 18:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 18:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 18:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 18:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*05/25/22 18:29*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*05/25/22 18:29*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*05/25/22 18:29*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*05/25/22 18:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Client Sample ID: MW-54_051322
Date Collected: 05/13/22 12:45
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166736-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.3**	**J**	2.0	0.86	ug/L			05/24/22 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*05/24/22 03:13*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 18:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 18:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 18:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:52	1
Vinyl chloride	**0.89**	**J**	1.0	0.45	ug/L			05/25/22 18:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*05/25/22 18:52*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*05/25/22 18:52*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*05/25/22 18:52*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*05/25/22 18:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Client Sample ID: MW-57_051322
Date Collected: 05/13/22 14:35
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166736-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.98	J	2.0	0.86	ug/L			05/24/22 03:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*05/24/22 03:38*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 19:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 19:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 19:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:14	1
Vinyl chloride	0.77	J	1.0	0.45	ug/L			05/25/22 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/25/22 19:14*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*05/25/22 19:14*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*05/25/22 19:14*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*05/25/22 19:14*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166734-B-2 MS	Matrix Spike	99	109	107	94
240-166734-B-2 MSD	Matrix Spike Duplicate	100	107	105	94
240-166736-1	TRIP BLANK_107	105	97	101	96
240-166736-2	MW-67_051322	105	97	103	96
240-166736-3	MW-54S_051322	104	97	102	96
240-166736-4	MW-54_051322	107	97	101	97
240-166736-5	MW-57_051322	105	95	101	95
LCS 240-527876/5	Lab Control Sample	97	106	104	93
MB 240-527876/8	Method Blank	104	99	103	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166722-B-2 MS	Matrix Spike	102
240-166722-B-2 MSD	Matrix Spike Duplicate	99
240-166736-2	MW-67_051322	105
240-166736-3	MW-54S_051322	101
240-166736-4	MW-54_051322	101
240-166736-5	MW-57_051322	104
LCS 240-527589/3	Lab Control Sample	101
MB 240-527589/6	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527876/8
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 11:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 11:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 11:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 11:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 11:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 11:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*05/25/22 11:45*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*05/25/22 11:45*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*05/25/22 11:45*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*05/25/22 11:45*	*1*

Lab Sample ID: LCS 240-527876/5
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.5		ug/L		102	63 - 134
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	77 - 123
Tetrachloroethene	20.0	21.2		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	20.2		ug/L		101	75 - 124
Trichloroethene	20.0	19.1		ug/L		96	70 - 122
Vinyl chloride	20.0	17.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-166734-B-2 MS
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	400	408		ug/L		102	56 - 135
cis-1,2-Dichloroethene	53		400	430		ug/L		94	66 - 128
Tetrachloroethene	20	U	400	413		ug/L		103	62 - 131
trans-1,2-Dichloroethene	120		400	515		ug/L		98	56 - 136
Trichloroethene	880		400	1190		ug/L		79	61 - 124
Vinyl chloride	20	U	400	332		ug/L		83	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166734-B-2 MS
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-166734-B-2 MSD
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	405		ug/L		101	56 - 135	1	26
cis-1,2-Dichloroethene	53		400	428		ug/L		94	66 - 128	1	14
Tetrachloroethene	20	U	400	400		ug/L		100	62 - 131	3	20
trans-1,2-Dichloroethene	120		400	511		ug/L		97	56 - 136	1	15
Trichloroethene	880		400	1190		ug/L		78	61 - 124	0	15
Vinyl chloride	20	U	400	336		ug/L		84	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-527589/6
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 21:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*05/23/22 21:00*	*1*

Lab Sample ID: LCS 240-527589/3
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.54		ug/L		95	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-166722-B-2 MS
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

Lab Sample ID: 240-166722-B-2 MSD
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.81		ug/L		98	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

GC/MS VOA

Analysis Batch: 527589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166736-2	MW-67_051322	Total/NA	Water	8260D SIM	
240-166736-3	MW-54S_051322	Total/NA	Water	8260D SIM	
240-166736-4	MW-54_051322	Total/NA	Water	8260D SIM	
240-166736-5	MW-57_051322	Total/NA	Water	8260D SIM	
MB 240-527589/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-527589/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166722-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166722-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 527876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166736-1	TRIP BLANK_107	Total/NA	Water	8260D	
240-166736-2	MW-67_051322	Total/NA	Water	8260D	
240-166736-3	MW-54S_051322	Total/NA	Water	8260D	
240-166736-4	MW-54_051322	Total/NA	Water	8260D	
240-166736-5	MW-57_051322	Total/NA	Water	8260D	
MB 240-527876/8	Method Blank	Total/NA	Water	8260D	
LCS 240-527876/5	Lab Control Sample	Total/NA	Water	8260D	
240-166734-B-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-166734-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Client Sample ID: TRIP BLANK_107
Lab Sample ID: 240-166736-1
Date Collected: 05/13/22 00:00
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527876	05/25/22 17:22	TJL1	TAL CAN

Client Sample ID: MW-67_051322
Lab Sample ID: 240-166736-2
Date Collected: 05/13/22 10:20
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527876	05/25/22 17:44	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 02:24	CS	TAL CAN

Client Sample ID: MW-54S_051322
Lab Sample ID: 240-166736-3
Date Collected: 05/13/22 11:30
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527876	05/25/22 18:29	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 02:49	CS	TAL CAN

Client Sample ID: MW-54_051322
Lab Sample ID: 240-166736-4
Date Collected: 05/13/22 12:45
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527876	05/25/22 18:52	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 03:13	CS	TAL CAN

Client Sample ID: MW-57_051322
Lab Sample ID: 240-166736-5
Date Collected: 05/13/22 14:35
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527876	05/25/22 19:14	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 03:38	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166736-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_107	5/13/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-67_051322	5/13/22	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-54S_051322	5/13/22	1130		6						6					N	G	X	X	X	X	X	X	X	" "
MW-54_051322	5/13/22	1245		6						6					N	G	X	X	X	X	X	X	X	" "
MW-57_051322	5/13/22	1435		6						6					N	G	X	X	X	X	X	X	X	" "

SG 5/13

240-166736 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed): ☐ Return to Client ☑ Disposal By

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	5/13/22 15:30	Novi Cold Storage	Arcadis	5/13/22 15:30
	ARCADIS	5/16/22 1200			5/16/22 1200
	FETA	5/16/22 1250	Received in Laboratory by:	ELETNC	5-17-22 0930

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5/27/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 166436
Canton Facility

Client Arcadis Site Name Ford LTP
Cooler Received on 5-17-22 Opened on 5-17-22
Cooler unpacked by: JWR
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location
TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC157842
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	(Yes)	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page
Samples processed by:

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) 3x40-MW-67, 1x40-MW-545 were received with bubble >6 mm in diameter. (Notify PM)
545

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 166736

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	2.1	2.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	0.6	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

May 30, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166736-1
Sample date: 2022-05-13
Report received by CADENA: 2022-05-27
Initial Data Verification completed by CADENA: 2022-05-30
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166736-1

	Sample Name:	TRIP BLANK_107				MW-67_051322				MW-54S_051322				MW-54_051322				MW-57_051322			
	Lab Sample ID:	2401667361				2401667362				2401667363				2401667364				2401667365			
	Sample Date:	5/13/2022				5/13/2022				5/13/2022				5/13/2022				5/13/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	3.3	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	0.59	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	52	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.89	1.0	ug/l	J	0.77	1.0	ug/l	J
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	1.3	2.0	ug/l	J	0.98	2.0	ug/l	J

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166737-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Patrick O'Meara

Authorized for release by:
5/27/2022 7:17:15 PM
Patrick O'Meara, Manager of Project Management
(330)966-5725
Patrick.O'Meara@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Job ID: 240-166737-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166737-1

Comments
No additional comments.

Receipt
The samples were received on 5/17/2022 @ 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.6º C and 2.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166737-1	TRIP BLANK_87	Water	05/14/22 00:00	05/17/22 09:30
240-166737-2	MW-40_051422	Water	05/14/22 09:31	05/17/22 09:30
240-166737-3	MW-31_051422	Water	05/14/22 10:31	05/17/22 09:30
240-166737-4	MW-208S_051422	Water	05/14/22 12:01	05/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Client Sample ID: TRIP BLANK_87 — Lab Sample ID: 240-166737-1

No Detections.

Client Sample ID: MW-40_051422 — Lab Sample ID: 240-166737-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.5		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-31_051422 — Lab Sample ID: 240-166737-3

No Detections.

Client Sample ID: MW-208S_051422 — Lab Sample ID: 240-166737-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Client Sample ID: TRIP BLANK_87

Date Collected: 05/14/22 00:00
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 19:37	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 19:37	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:37	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 19:37	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:37	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 19:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/25/22 19:37*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*05/25/22 19:37*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*05/25/22 19:37*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*05/25/22 19:37*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Client Sample ID: MW-40_051422
Date Collected: 05/14/22 09:31
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 04:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*05/24/22 04:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 14:40	1
cis-1,2-Dichloroethene	**2.5**		1.0	0.46	ug/L			05/25/22 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 14:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*05/25/22 14:40*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*05/25/22 14:40*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*05/25/22 14:40*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*05/25/22 14:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Client Sample ID: MW-31_051422

Date Collected: 05/14/22 10:31
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 04:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*05/24/22 04:28*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/25/22 15:03*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*05/25/22 15:03*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*05/25/22 15:03*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*05/25/22 15:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Client Sample ID: MW-208S_051422

Date Collected: 05/14/22 12:01
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 04:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*66 - 120*		*05/24/22 04:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*05/25/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*05/25/22 15:27*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*05/25/22 15:27*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*05/25/22 15:27*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166734-B-2 MS	Matrix Spike	99	109	107	94
240-166734-B-2 MSD	Matrix Spike Duplicate	100	107	105	94
240-166737-1	TRIP BLANK_87	105	98	103	96
240-166737-2	MW-40_051422	107	108	106	112
240-166737-3	MW-31_051422	105	108	107	113
240-166737-4	MW-208S_051422	106	109	109	114
240-166782-F-3 MS	Matrix Spike	92	104	105	100
240-166782-F-3 MSD	Matrix Spike Duplicate	91	101	103	99
LCS 240-527876/5	Lab Control Sample	97	106	104	93
LCS 240-527906/5	Lab Control Sample	96	107	110	105
MB 240-527876/8	Method Blank	104	99	103	95
MB 240-527906/8	Method Blank	102	108	108	109

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166722-B-2 MS	Matrix Spike	102
240-166722-B-2 MSD	Matrix Spike Duplicate	99
240-166737-2	MW-40_051422	105
240-166737-3	MW-31_051422	103
240-166737-4	MW-208S_051422	100
LCS 240-527589/3	Lab Control Sample	101
MB 240-527589/6	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527876/8
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 11:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 11:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 11:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 11:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 11:45	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 11:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*05/25/22 11:45*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*05/25/22 11:45*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*05/25/22 11:45*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*05/25/22 11:45*	*1*

Lab Sample ID: LCS 240-527876/5
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.5		ug/L		102	63 - 134
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	77 - 123
Tetrachloroethene	20.0	21.2		ug/L		106	76 - 123
trans-1,2-Dichloroethene	20.0	20.2		ug/L		101	75 - 124
Trichloroethene	20.0	19.1		ug/L		96	70 - 122
Vinyl chloride	20.0	17.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-166734-B-2 MS
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	400	408		ug/L		102	56 - 135
cis-1,2-Dichloroethene	53		400	430		ug/L		94	66 - 128
Tetrachloroethene	20	U	400	413		ug/L		103	62 - 131
trans-1,2-Dichloroethene	120		400	515		ug/L		98	56 - 136
Trichloroethene	880		400	1190		ug/L		79	61 - 124
Vinyl chloride	20	U	400	332		ug/L		83	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166734-B-2 MS
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-166734-B-2 MSD
Matrix: Water
Analysis Batch: 527876

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	405		ug/L		101	56 - 135	1	26
cis-1,2-Dichloroethene	53		400	428		ug/L		94	66 - 128	1	14
Tetrachloroethene	20	U	400	400		ug/L		100	62 - 131	3	20
trans-1,2-Dichloroethene	120		400	511		ug/L		97	56 - 136	1	15
Trichloroethene	880		400	1190		ug/L		78	61 - 124	0	15
Vinyl chloride	20	U	400	336		ug/L		84	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: MB 240-527906/8
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 13:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 13:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 13:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 13:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 13:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 13:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*05/25/22 13:04*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*05/25/22 13:04*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*05/25/22 13:04*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*05/25/22 13:04*	*1*

Lab Sample ID: LCS 240-527906/5
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.7		ug/L		103	63 - 134
cis-1,2-Dichloroethene	25.0	25.2		ug/L		101	77 - 123
Tetrachloroethene	25.0	26.3		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	24.9		ug/L		100	75 - 124
Trichloroethene	25.0	26.1		ug/L		104	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-527906/5
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	23.0		ug/L		92	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-166782-F-3 MS
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	13	U	313	304		ug/L		97	56 - 135		
cis-1,2-Dichloroethene	250		313	526		ug/L		87	66 - 128		
Tetrachloroethene	13	U	313	294		ug/L		94	62 - 131		
trans-1,2-Dichloroethene	94		313	381		ug/L		92	56 - 136		
Trichloroethene	470		313	734		ug/L		84	61 - 124		
Vinyl chloride	13	U	313	274		ug/L		88	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-166782-F-3 MSD
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	313	302		ug/L		97	56 - 135	1	26
cis-1,2-Dichloroethene	250		313	525		ug/L		87	66 - 128	0	14
Tetrachloroethene	13	U	313	295		ug/L		94	62 - 131	0	20
trans-1,2-Dichloroethene	94		313	377		ug/L		91	56 - 136	1	15
Trichloroethene	470		313	734		ug/L		84	61 - 124	0	15
Vinyl chloride	13	U	313	275		ug/L		88	43 - 157	0	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-527589/6
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 21:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*05/23/22 21:00*	*1*

Lab Sample ID: LCS 240-527589/3
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.54		ug/L		95	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*

Lab Sample ID: 240-166722-B-2 MS
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

Lab Sample ID: 240-166722-B-2 MSD
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.81		ug/L		98	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

GC/MS VOA

Analysis Batch: 527589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166737-2	MW-40_051422	Total/NA	Water	8260D SIM	
240-166737-3	MW-31_051422	Total/NA	Water	8260D SIM	
240-166737-4	MW-208S_051422	Total/NA	Water	8260D SIM	
MB 240-527589/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-527589/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166722-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166722-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 527876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166737-1	TRIP BLANK_87	Total/NA	Water	8260D	
MB 240-527876/8	Method Blank	Total/NA	Water	8260D	
LCS 240-527876/5	Lab Control Sample	Total/NA	Water	8260D	
240-166734-B-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-166734-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 527906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166737-2	MW-40_051422	Total/NA	Water	8260D	
240-166737-3	MW-31_051422	Total/NA	Water	8260D	
240-166737-4	MW-208S_051422	Total/NA	Water	8260D	
MB 240-527906/8	Method Blank	Total/NA	Water	8260D	
LCS 240-527906/5	Lab Control Sample	Total/NA	Water	8260D	
240-166782-F-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-166782-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Client Sample ID: TRIP BLANK_87
Date Collected: 05/14/22 00:00
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527876	05/25/22 19:37	TJL1	TAL CAN

Client Sample ID: MW-40_051422
Date Collected: 05/14/22 09:31
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527906	05/25/22 14:40	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 04:03	CS	TAL CAN

Client Sample ID: MW-31_051422
Date Collected: 05/14/22 10:31
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527906	05/25/22 15:03	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 04:28	CS	TAL CAN

Client Sample ID: MW-208S_051422
Date Collected: 05/14/22 12:01
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166737-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527906	05/25/22 15:27	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 04:52	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166737-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 87	5/14/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-40_051422	5/14/22	9:31		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-31_051422	5/14/22	10:31		X						6					N	G	X	X	X	X	X	X	X	
MW-2085_051422	5/14/22	12:01		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	5/14/22 1252	Novi, cold Storage	Arcadis	5/14/22 1252
	ARCADIS	5/16/22 1200		EFETA	5/16/22 1200
	EFETA	5/16/22 1250	Received in Laboratory by:	EETNC	5-17-22 0930

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5/27/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 166737
Canton Facility

Client Arcadis Site Name Ford LTP | Cooler unpacked by: DWR

Cooler Received on 5-17-22 Opened on 5-17-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 166737

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	2.1	2.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	0.6	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

May 30, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166737-1
Sample date: 2022-05-14
Report received by CADENA: 2022-05-27
Initial Data Verification completed by CADENA: 2022-05-30
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166737-1

		Sample Name:	TRIP BLANK_87				MW-40_051422				MW-31_051422				MW-208S_051422			
		Lab Sample ID:	2401667371				2401667372				2401667373				2401667374			
		Sample Date:	5/14/2022				5/14/2022				5/14/2022				5/14/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	2.5	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166739-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Patrick O'Meara

Authorized for release by:
5/27/2022 7:24:09 PM
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Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-166739-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166739-1

Comments
No additional comments.

Receipt
The samples were received on 5/17/2022 @ 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.6º C and 2.1º C.

GC/MS VOA
Method 8260D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-527862.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166739-1	TRIP BLANK_152	Water	05/14/22 00:00	05/17/22 09:30
240-166739-2	MW-30_051422	Water	05/14/22 09:45	05/17/22 09:30
240-166739-3	MW-209S_051422	Water	05/14/22 11:15	05/17/22 09:30
240-166739-4	MW-41_051422	Water	05/14/22 12:17	05/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Client Sample ID: TRIP BLANK_152 — Lab Sample ID: 240-166739-1

No Detections.

Client Sample ID: MW-30_051422 — Lab Sample ID: 240-166739-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	13		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-209S_051422 — Lab Sample ID: 240-166739-3

No Detections.

Client Sample ID: MW-41_051422 — Lab Sample ID: 240-166739-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.2		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.72	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Client Sample ID: TRIP BLANK_152
Date Collected: 05/14/22 00:00
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166739-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 17:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 17:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 17:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 17:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 17:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 17:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*05/25/22 17:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*05/25/22 17:50*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*05/25/22 17:50*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*05/25/22 17:50*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Client Sample ID: MW-30_051422

Date Collected: 05/14/22 09:45
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166739-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	13		2.0	0.86	ug/L			05/24/22 05:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*		*05/24/22 05:17*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 18:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 18:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 18:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/25/22 18:14*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*05/25/22 18:14*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*05/25/22 18:14*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*05/25/22 18:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Client Sample ID: MW-209S_051422

Date Collected: 05/14/22 11:15
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166739-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 05:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*05/24/22 05:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 18:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 18:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 18:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*05/25/22 18:39*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*05/25/22 18:39*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*05/25/22 18:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*05/25/22 18:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Client Sample ID: MW-41_051422

Date Collected: 05/14/22 12:17
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166739-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*05/24/22 23:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 19:03	1
cis-1,2-Dichloroethene	**1.2**		1.0	0.46	ug/L			05/25/22 19:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 19:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:03	1
Vinyl chloride	**0.72**	**J**	1.0	0.45	ug/L			05/25/22 19:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/25/22 19:03*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*05/25/22 19:03*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*05/25/22 19:03*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/25/22 19:03*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166739-1	TRIP BLANK_152	97	90	89	96
240-166739-2	MW-30_051422	101	92	92	99
240-166739-3	MW-209S_051422	96	91	92	96
240-166739-4	MW-41_051422	101	94	94	100
LCS 240-527862/5	Lab Control Sample	97	97	95	101
LCSD 240-527862/8	Lab Control Sample Dup	99	98	96	100
MB 240-527862/9	Method Blank	99	96	94	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166722-B-2 MS	Matrix Spike	102
240-166722-B-2 MSD	Matrix Spike Duplicate	99
240-166739-2	MW-30_051422	98
240-166739-3	MW-209S_051422	101
240-166739-4	MW-41_051422	106
240-166878-I-2 MS	Matrix Spike	102
240-166878-O-2 MSD	Matrix Spike Duplicate	102
LCS 240-527589/3	Lab Control Sample	101
LCS 240-527794/3	Lab Control Sample	103
MB 240-527589/6	Method Blank	102
MB 240-527794/4	Method Blank	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527862/9
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 12:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 12:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 12:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 12:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 12:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 12:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*05/25/22 12:55*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*05/25/22 12:55*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*05/25/22 12:55*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/25/22 12:55*	*1*

Lab Sample ID: LCS 240-527862/5
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	20.7		ug/L		104	63 - 134		
cis-1,2-Dichloroethene			20.0	19.6		ug/L		98	77 - 123		
Tetrachloroethene			20.0	16.9		ug/L		85	76 - 123		
trans-1,2-Dichloroethene			20.0	19.5		ug/L		98	75 - 124		
Trichloroethene			20.0	19.0		ug/L		95	70 - 122		
Vinyl chloride			20.0	19.0		ug/L		95	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: LCSD 240-527862/8
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene			20.0	20.7		ug/L		104	63 - 134	0	35
cis-1,2-Dichloroethene			20.0	19.7		ug/L		99	77 - 123	1	35
Tetrachloroethene			20.0	17.1		ug/L		85	76 - 123	1	35
trans-1,2-Dichloroethene			20.0	19.8		ug/L		99	75 - 124	2	35
Trichloroethene			20.0	19.5		ug/L		97	70 - 122	3	35
Vinyl chloride			20.0	18.2		ug/L		91	60 - 144	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 240-527862/8
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	100		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-527589/6
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 21:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		66 - 120		05/23/22 21:00	1

Lab Sample ID: LCS 240-527589/3
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.54		ug/L		95	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		66 - 120

Lab Sample ID: 240-166722-B-2 MS
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		66 - 120

Lab Sample ID: 240-166722-B-2 MSD
Matrix: Water
Analysis Batch: 527589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.81		ug/L		98	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		66 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-527794/4
Matrix: Water
Analysis Batch: 527794

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 20:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*05/24/22 20:24*	*1*

Lab Sample ID: LCS 240-527794/3
Matrix: Water
Analysis Batch: 527794

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.50		ug/L		95	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*

Lab Sample ID: 240-166878-I-2 MS
Matrix: Water
Analysis Batch: 527794

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

Lab Sample ID: 240-166878-O-2 MSD
Matrix: Water
Analysis Batch: 527794

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

GC/MS VOA

Analysis Batch: 527589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166739-2	MW-30_051422	Total/NA	Water	8260D SIM	
240-166739-3	MW-209S_051422	Total/NA	Water	8260D SIM	
MB 240-527589/6	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-527589/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166722-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166722-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 527794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166739-4	MW-41_051422	Total/NA	Water	8260D SIM	
MB 240-527794/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-527794/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166878-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166878-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 527862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166739-1	TRIP BLANK_152	Total/NA	Water	8260D	
240-166739-2	MW-30_051422	Total/NA	Water	8260D	
240-166739-3	MW-209S_051422	Total/NA	Water	8260D	
240-166739-4	MW-41_051422	Total/NA	Water	8260D	
MB 240-527862/9	Method Blank	Total/NA	Water	8260D	
LCS 240-527862/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 240-527862/8	Lab Control Sample Dup	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Client Sample ID: TRIP BLANK_152

Lab Sample ID: 240-166739-1
Matrix: Water
Date Collected: 05/14/22 00:00
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 17:50	HMB	TAL CAN

Client Sample ID: MW-30_051422

Lab Sample ID: 240-166739-2
Matrix: Water
Date Collected: 05/14/22 09:45
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 18:14	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 05:17	CS	TAL CAN

Client Sample ID: MW-209S_051422

Lab Sample ID: 240-166739-3
Matrix: Water
Date Collected: 05/14/22 11:15
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 18:39	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	527589	05/24/22 05:42	CS	TAL CAN

Client Sample ID: MW-41_051422

Lab Sample ID: 240-166739-4
Matrix: Water
Date Collected: 05/14/22 12:17
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 19:03	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	527794	05/24/22 23:11	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166739-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_152	5/14/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-30_051422	5/14/22	945		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-209S_051422	5/14/22	1115		6						6					N	G	X	X	X	X	X	X	X	" "
MW-41_051422	5/14/22	1217		6						6					N	G	X	X	X	X	X	X	X	" "

SK 5/14

240-166739 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	5/14/22 1300	Received by:	ARCADIS	5/14/22 1300
Relinquished by:	ARCADIS	5/14/22 1510	Received by: NOVI COLD STORAGE	ARCADIS	5/14/22 1510
Relinquished by:	ARCADIS	5/16/22 1200	Received in Laboratory by:	TESTA	5/16/22 1200

EGTNC 5-17-22 0930

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5/27/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 166439**
Canton Facility

Client Arcadis Site Name Ford LTP | Cooler unpacked by: DMR

Cooler Received on 5-17-22 Opened on 5-17-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1ea	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC157842
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 010420IG	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 166739

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	2.1	2.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	0.6	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

May 31, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166739-1
Sample date: 2022-05-14
Report received by CADENA: 2022-05-27
Initial Data Verification completed by CADENA: 2022-05-31
Number of Samples:4
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, LCS/LCD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166739-1

		Sample Name:	TRIP BLANK_152				MW-30_051422				MW-209S_051422				MW-41_051422			
		Lab Sample ID:	2401667391				2401667392				2401667393				2401667394			
		Sample Date:	5/14/2022				5/14/2022				5/14/2022				5/14/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.72	1.0	ug/l	J
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					13	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166740-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Patrick O'Meara

Authorized for release by:
5/27/2022 7:27:13 PM
Patrick O'Meara, Manager of Project Management
(330)966-5725
Patrick.O'Meara@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-166740-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166740-1

Comments
No additional comments.

Receipt
The samples were received on 5/17/2022 @ 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.6º C and 2.1º C.

GC/MS VOA
Method 8260D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-527862.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166740-1	TRIP BLANK_114	Water	05/14/22 00:00	05/17/22 09:30
240-166740-2	MW-15-61D_051422	Water	05/14/22 09:20	05/17/22 09:30
240-166740-3	MW-42_051422	Water	05/14/22 10:33	05/17/22 09:30
240-166740-4	MW-211S_051422	Water	05/14/22 11:23	05/17/22 09:30
240-166740-5	MW-35_051422	Water	05/14/22 12:08	05/17/22 09:30
240-166740-6	MW-212S_051422	Water	05/14/22 13:00	05/17/22 09:30
240-166740-7	MW-213S_051422	Water	05/14/22 13:55	05/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: TRIP BLANK_114 — Lab Sample ID: 240-166740-1

No Detections.

Client Sample ID: MW-15-61D_051422 — Lab Sample ID: 240-166740-2

No Detections.

Client Sample ID: MW-42_051422 — Lab Sample ID: 240-166740-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.55	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-211S_051422 — Lab Sample ID: 240-166740-4

No Detections.

Client Sample ID: MW-35_051422 — Lab Sample ID: 240-166740-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.7		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	5.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-212S_051422 — Lab Sample ID: 240-166740-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.2		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-213S_051422 — Lab Sample ID: 240-166740-7

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: TRIP BLANK_114
Date Collected: 05/14/22 00:00
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 19:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*05/25/22 19:28*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*05/25/22 19:28*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*05/25/22 19:28*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*05/25/22 19:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: MW-15-61D_051422
Date Collected: 05/14/22 09:20
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*05/23/22 21:09*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*05/25/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*05/25/22 19:52*	*1*
Toluene-d8 (Surr)	*90*		*78 - 122*		*05/25/22 19:52*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*05/25/22 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: MW-42_051422

Date Collected: 05/14/22 10:33
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 22:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/23/22 22:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 20:17	1
Vinyl chloride	**0.55**	**J**	1.0	0.45	ug/L			05/25/22 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/25/22 20:17*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*05/25/22 20:17*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*05/25/22 20:17*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/25/22 20:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: MW-211S_051422

Date Collected: 05/14/22 11:23
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 22:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*05/23/22 22:44*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 20:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 20:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 20:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 20:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 20:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/25/22 20:42*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*05/25/22 20:42*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*05/25/22 20:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*05/25/22 20:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: MW-35_051422
Date Collected: 05/14/22 12:08
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.7**		2.0	0.86	ug/L			05/23/22 23:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/23/22 23:09*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 21:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 21:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 21:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 21:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 21:06	1
Vinyl chloride	**5.2**		1.0	0.45	ug/L			05/25/22 21:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*05/25/22 21:06*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*05/25/22 21:06*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*05/25/22 21:06*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*05/25/22 21:06*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: MW-212S_051422
Date Collected: 05/14/22 13:00
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 23:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*05/23/22 23:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 15:51	1
cis-1,2-Dichloroethene	**1.2**		1.0	0.46	ug/L			05/25/22 15:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 15:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 15:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 15:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*05/25/22 15:51*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*05/25/22 15:51*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*05/25/22 15:51*	*1*
Dibromofluoromethane (Surr)	*113*		*73 - 120*		*05/25/22 15:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: MW-213S_051422

Date Collected: 05/14/22 13:55
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-7

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 23:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*05/23/22 23:57*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 16:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 16:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 16:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 16:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 16:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*05/25/22 16:15*	*1*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*		*05/25/22 16:15*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*05/25/22 16:15*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*05/25/22 16:15*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166740-1	TRIP BLANK_114	99	94	94	102
240-166740-2	MW-15-61D_051422	98	91	90	97
240-166740-3	MW-42_051422	101	93	91	100
240-166740-4	MW-211S_051422	101	95	94	103
240-166740-5	MW-35_051422	104	94	95	105
240-166740-6	MW-212S_051422	109	110	106	113
240-166740-7	MW-213S_051422	110	109	108	116
240-166782-F-3 MS	Matrix Spike	92	104	105	100
240-166782-F-3 MSD	Matrix Spike Duplicate	91	101	103	99
LCS 240-527862/5	Lab Control Sample	97	97	95	101
LCS 240-527906/5	Lab Control Sample	96	107	110	105
LCSD 240-527862/8	Lab Control Sample Dup	99	98	96	100
MB 240-527862/9	Method Blank	99	96	94	100
MB 240-527906/8	Method Blank	102	108	108	109

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166740-2	MW-15-61D_051422	83
240-166740-2 MS	MW-15-61D_051422	83
240-166740-2 MSD	MW-15-61D_051422	81
240-166740-3	MW-42_051422	84
240-166740-4	MW-211S_051422	83
240-166740-5	MW-35_051422	84
240-166740-6	MW-212S_051422	86
240-166740-7	MW-213S_051422	87
LCS 240-527590/3	Lab Control Sample	82
MB 240-527590/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527862/9
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 12:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 12:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 12:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 12:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 12:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 12:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*05/25/22 12:55*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*05/25/22 12:55*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*05/25/22 12:55*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/25/22 12:55*	*1*

Lab Sample ID: LCS 240-527862/5
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134
cis-1,2-Dichloroethene	20.0	19.6		ug/L		98	77 - 123
Tetrachloroethene	20.0	16.9		ug/L		85	76 - 123
trans-1,2-Dichloroethene	20.0	19.5		ug/L		98	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	19.0		ug/L		95	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: LCSD 240-527862/8
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20.0	20.7		ug/L		104	63 - 134	0	35
cis-1,2-Dichloroethene	20.0	19.7		ug/L		99	77 - 123	1	35
Tetrachloroethene	20.0	17.1		ug/L		85	76 - 123	1	35
trans-1,2-Dichloroethene	20.0	19.8		ug/L		99	75 - 124	2	35
Trichloroethene	20.0	19.5		ug/L		97	70 - 122	3	35
Vinyl chloride	20.0	18.2		ug/L		91	60 - 144	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 240-527862/8
Matrix: Water
Analysis Batch: 527862

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: MB 240-527906/8
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 13:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 13:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 13:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 13:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 13:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 13:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*05/25/22 13:04*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*05/25/22 13:04*	*1*
Toluene-d8 (Surr)	*108*		*78 - 122*		*05/25/22 13:04*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*05/25/22 13:04*	*1*

Lab Sample ID: LCS 240-527906/5
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.7		ug/L		103	63 - 134
cis-1,2-Dichloroethene	25.0	25.2		ug/L		101	77 - 123
Tetrachloroethene	25.0	26.3		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	24.9		ug/L		100	75 - 124
Trichloroethene	25.0	26.1		ug/L		104	70 - 122
Vinyl chloride	25.0	23.0		ug/L		92	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*
Dibromofluoromethane (Surr)	*105*		*73 - 120*

Lab Sample ID: 240-166782-F-3 MS
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	313	304		ug/L		97	56 - 135
cis-1,2-Dichloroethene	250		313	526		ug/L		87	66 - 128
Tetrachloroethene	13	U	313	294		ug/L		94	62 - 131
trans-1,2-Dichloroethene	94		313	381		ug/L		92	56 - 136
Trichloroethene	470		313	734		ug/L		84	61 - 124

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166782-F-3 MS
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride	13	U	313	274		ug/L		88	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-166782-F-3 MSD
Matrix: Water
Analysis Batch: 527906

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	313	302		ug/L		97	56 - 135	1	26
cis-1,2-Dichloroethene	250		313	525		ug/L		87	66 - 128	0	14
Tetrachloroethene	13	U	313	295		ug/L		94	62 - 131	0	20
trans-1,2-Dichloroethene	94		313	377		ug/L		91	56 - 136	1	15
Trichloroethene	470		313	734		ug/L		84	61 - 124	0	15
Vinyl chloride	13	U	313	275		ug/L		88	43 - 157	0	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-527590/4
Matrix: Water
Analysis Batch: 527590

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 20:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*05/23/22 20:08*	*1*

Lab Sample ID: LCS 240-527590/3
Matrix: Water
Analysis Batch: 527590

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	11.6		ug/L		116	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-166740-2 MS
Matrix: Water
Analysis Batch: 527590

Client Sample ID: MW-15-61D_051422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-166740-2 MSD
Matrix: Water
Analysis Batch: 527590

Client Sample ID: MW-15-61D_051422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

GC/MS VOA

Analysis Batch: 527590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166740-2	MW-15-61D_051422	Total/NA	Water	8260D SIM	
240-166740-3	MW-42_051422	Total/NA	Water	8260D SIM	
240-166740-4	MW-211S_051422	Total/NA	Water	8260D SIM	
240-166740-5	MW-35_051422	Total/NA	Water	8260D SIM	
240-166740-6	MW-212S_051422	Total/NA	Water	8260D SIM	
240-166740-7	MW-213S_051422	Total/NA	Water	8260D SIM	
MB 240-527590/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-527590/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166740-2 MS	MW-15-61D_051422	Total/NA	Water	8260D SIM	
240-166740-2 MSD	MW-15-61D_051422	Total/NA	Water	8260D SIM	

Analysis Batch: 527862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166740-1	TRIP BLANK_114	Total/NA	Water	8260D	
240-166740-2	MW-15-61D_051422	Total/NA	Water	8260D	
240-166740-3	MW-42_051422	Total/NA	Water	8260D	
240-166740-4	MW-211S_051422	Total/NA	Water	8260D	
240-166740-5	MW-35_051422	Total/NA	Water	8260D	
MB 240-527862/9	Method Blank	Total/NA	Water	8260D	
LCS 240-527862/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 240-527862/8	Lab Control Sample Dup	Total/NA	Water	8260D	

Analysis Batch: 527906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166740-6	MW-212S_051422	Total/NA	Water	8260D	
240-166740-7	MW-213S_051422	Total/NA	Water	8260D	
MB 240-527906/8	Method Blank	Total/NA	Water	8260D	
LCS 240-527906/5	Lab Control Sample	Total/NA	Water	8260D	
240-166782-F-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-166782-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: TRIP BLANK_114
Lab Sample ID: 240-166740-1
Date Collected: 05/14/22 00:00
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 19:28	HMB	TAL CAN

Client Sample ID: MW-15-61D_051422
Lab Sample ID: 240-166740-2
Date Collected: 05/14/22 09:20
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 19:52	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/23/22 21:09	CS	TAL CAN

Client Sample ID: MW-42_051422
Lab Sample ID: 240-166740-3
Date Collected: 05/14/22 10:33
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 20:17	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/23/22 22:20	CS	TAL CAN

Client Sample ID: MW-211S_051422
Lab Sample ID: 240-166740-4
Date Collected: 05/14/22 11:23
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 20:42	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/23/22 22:44	CS	TAL CAN

Client Sample ID: MW-35_051422
Lab Sample ID: 240-166740-5
Date Collected: 05/14/22 12:08
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527862	05/25/22 21:06	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/23/22 23:09	CS	TAL CAN

Client Sample ID: MW-212S_051422
Lab Sample ID: 240-166740-6
Date Collected: 05/14/22 13:00
Matrix: Water
Date Received: 05/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527906	05/25/22 15:51	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/23/22 23:33	CS	TAL CAN

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Client Sample ID: MW-213S_051422

Date Collected: 05/14/22 13:55
Date Received: 05/17/22 09:30

Lab Sample ID: 240-166740-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527906	05/25/22 16:15	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/23/22 23:57	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166740-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: CHRISTINA WEAVER	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_114	5/14/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-15-61D_051422	5/14/22	0920		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-42_051422	5/14/22	1033		6						6					N	G	X	X	X	X	X	X	X	
MW-21IS_051422	5/14/22	1123		6						6					N	G	X	X	X	X	X	X	X	
MW-35_051422	5/14/22	1208		6						6					N	G	X	X	X	X	X	X	X	
MW-21DS_051422	5/14/22	1300		6						6					N	G	X	X	X	X	X	X	X	
MW-21DS_051422	5/14/22	1355		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained): ☐ Return to Client ☑ Disposal By Lab ☐ Archive

240-166740 Chain of Custody

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	5/14/22 / 1510	NOVI COLD STORAGE	ARCADIS	5/14/22 / 1510
	ARCADIS	5/16/22 / 1200		EETA	5/16/22 1200
	EETA	5/16/22 1250	Received in Laboratory by:	EETNC	5-17-22 0930

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5/27/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 166740**
Canton Facility

Client Arcadis Site Name Ford LTP
Cooler Received on 5-17-22 Opened on 5-17-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by: JWR

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 166740

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	2.1	2.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	0.6	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

May 31, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166740-1
Sample date: 2022-05-14
Report received by CADENA: 2022-05-27
Initial Data Verification completed by CADENA: 2022-05-31
Number of Samples:7
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, LCS/LCD RPD, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166740-1

		Sample Name:	TRIP BLANK_114				MW-15-61D_051422				MW-42_051422				MW-211S_051422				MW-35_051422				MW-212S_051422				MW-213S_051422			
		Lab Sample ID:	2401667401				2401667402				2401667403				2401667404				2401667405				2401667406				2401667407			
		Sample Date:	5/14/2022				5/14/2022				5/14/2022				5/14/2022				5/14/2022				5/14/2022				5/14/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																														
OSW-8260D																														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.55	1.0	ug/l	J	ND	1.0	ug/l	---	5.2	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	2.7	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166781-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
5/31/2022 2:15:45 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-166781-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166781-1

Comments
No additional comments.

Receipt
The samples were received on 5/18/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.1º C and 0.2º C.

GC/MS VOA
Method 8260D: An MS/MSD was prepared in 240-527909 however due to an auto-sampler error it was able to be analyzed within the tune time. The effected samples are TRIP BLANK_110 (240-166781-1), MW-68_051622 (240-166781-2) and MW-47_051622 (240-166781-3).

Method 8260D SIM: The method requirement for no headspace was not met. The following volatile sample were analyzed with headspace in the sample container: MW-68_051622 (240-166781-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166781-1	TRIP BLANK_110	Water	05/16/22 00:00	05/18/22 08:00
240-166781-2	MW-68_051622	Water	05/16/22 12:05	05/18/22 08:00
240-166781-3	MW-47_051622	Water	05/16/22 14:00	05/18/22 08:00
240-166781-4	MW-46_051622	Water	05/16/22 15:40	05/18/22 08:00
240-166781-5	DUP-03	Water	05/16/22 00:00	05/18/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Client Sample ID: TRIP BLANK_110 — Lab Sample ID: 240-166781-1

No Detections.

Client Sample ID: MW-68_051622 — Lab Sample ID: 240-166781-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	24		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	3.8		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	1.4		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-47_051622 — Lab Sample ID: 240-166781-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	5.8		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.6		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	17		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-46_051622 — Lab Sample ID: 240-166781-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.1		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	7.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-03 — Lab Sample ID: 240-166781-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.9	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	5.8		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.3		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	19		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Client Sample ID: TRIP BLANK_110
Date Collected: 05/16/22 00:00
Date Received: 05/18/22 08:00

Lab Sample ID: 240-166781-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 14:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 14:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 14:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 14:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 14:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 14:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*05/25/22 14:27*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*05/25/22 14:27*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/25/22 14:27*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*05/25/22 14:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Client Sample ID: MW-68_051622

Date Collected: 05/16/22 12:05
Date Received: 05/18/22 08:00

Lab Sample ID: 240-166781-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 04:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*05/24/22 04:19*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 18:13	1
cis-1,2-Dichloroethene	**24**		1.0	0.46	ug/L			05/25/22 18:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:13	1
trans-1,2-Dichloroethene	**3.8**		1.0	0.51	ug/L			05/25/22 18:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 18:13	1
Vinyl chloride	**1.4**		1.0	0.45	ug/L			05/25/22 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*05/25/22 18:13*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*05/25/22 18:13*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/25/22 18:13*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*05/25/22 18:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Client Sample ID: MW-47_051622
Date Collected: 05/16/22 14:00
Date Received: 05/18/22 08:00

Lab Sample ID: 240-166781-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.6**	**J**	2.0	0.86	ug/L			05/24/22 04:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*05/24/22 04:42*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 19:28	1
cis-1,2-Dichloroethene	**5.8**		1.0	0.46	ug/L			05/25/22 19:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:28	1
trans-1,2-Dichloroethene	**1.6**		1.0	0.51	ug/L			05/25/22 19:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 19:28	1
Vinyl chloride	**17**		1.0	0.45	ug/L			05/25/22 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*05/25/22 19:28*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*05/25/22 19:28*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*05/25/22 19:28*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*05/25/22 19:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Client Sample ID: MW-46_051622
Date Collected: 05/16/22 15:40
Date Received: 05/18/22 08:00

Lab Sample ID: 240-166781-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/24/22 05:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*05/24/22 05:05*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 19:09	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.46	ug/L			05/26/22 19:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 19:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:09	1
Vinyl chloride	**7.5**		1.0	0.45	ug/L			05/26/22 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*05/26/22 19:09*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*05/26/22 19:09*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*05/26/22 19:09*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*05/26/22 19:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Client Sample ID: DUP-03
Date Collected: 05/16/22 00:00
Date Received: 05/18/22 08:00

Lab Sample ID: 240-166781-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.9**	**J**	2.0	0.86	ug/L			05/24/22 05:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*05/24/22 05:29*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 19:33	1
cis-1,2-Dichloroethene	**5.8**		1.0	0.46	ug/L			05/26/22 19:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:33	1
trans-1,2-Dichloroethene	**1.3**		1.0	0.51	ug/L			05/26/22 19:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:33	1
Vinyl chloride	**19**		1.0	0.45	ug/L			05/26/22 19:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*05/26/22 19:33*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*05/26/22 19:33*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*05/26/22 19:33*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*05/26/22 19:33*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166781-1	TRIP BLANK_110	103	85	98	106
240-166781-2	MW-68_051622	100	85	98	105
240-166781-3	MW-47_051622	102	82	99	105
240-166781-4	MW-46_051622	92	93	99	99
240-166781-5	DUP-03	94	92	96	98
240-166933-D-2 MS	Matrix Spike	92	101	102	98
240-166933-G-2 MSD	Matrix Spike Duplicate	90	102	103	98
LCS 240-527909/4	Lab Control Sample	98	99	99	107
LCS 240-528104/5	Lab Control Sample	87	98	101	94
MB 240-527909/6	Method Blank	101	87	98	103
MB 240-528104/7	Method Blank	93	94	100	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166740-B-2 MS	Matrix Spike	83
240-166740-B-2 MSD	Matrix Spike Duplicate	81
240-166781-2	MW-68_051622	85
240-166781-3	MW-47_051622	84
240-166781-4	MW-46_051622	81
240-166781-5	DUP-03	85
LCS 240-527590/3	Lab Control Sample	82
MB 240-527590/4	Method Blank	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-527909/6
Matrix: Water
Analysis Batch: 527909

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/25/22 12:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/25/22 12:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 12:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/25/22 12:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/25/22 12:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/25/22 12:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/25/22 12:47*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*05/25/22 12:47*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/25/22 12:47*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*05/25/22 12:47*	*1*

Lab Sample ID: LCS 240-527909/4
Matrix: Water
Analysis Batch: 527909

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.5		ug/L		102	63 - 134
cis-1,2-Dichloroethene	25.0	27.2		ug/L		109	77 - 123
Tetrachloroethene	25.0	26.2		ug/L		105	76 - 123
trans-1,2-Dichloroethene	25.0	28.1		ug/L		113	75 - 124
Trichloroethene	25.0	26.4		ug/L		106	70 - 122
Vinyl chloride	12.5	11.1		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: MB 240-528104/7
Matrix: Water
Analysis Batch: 528104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 14:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 14:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 14:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 14:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 14:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/26/22 14:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*05/26/22 14:00*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*05/26/22 14:00*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*05/26/22 14:00*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-528104/7
Matrix: Water
Analysis Batch: 528104

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*05/26/22 14:00*	*1*

Lab Sample ID: LCS 240-528104/5
Matrix: Water
Analysis Batch: 528104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	25.8		ug/L		103	76 - 123
trans-1,2-Dichloroethene	25.0	23.8		ug/L		95	75 - 124
Trichloroethene	25.0	25.3		ug/L		101	70 - 122
Vinyl chloride	25.0	22.9		ug/L		91	60 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-166933-D-2 MS
Matrix: Water
Analysis Batch: 528104

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	24.7		ug/L		99	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	24.1		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 136
Trichloroethene	1.0	U	25.0	24.2		ug/L		97	61 - 124
Vinyl chloride	1.0	U	25.0	22.4		ug/L		90	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-166933-G-2 MSD
Matrix: Water
Analysis Batch: 528104

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	23.8		ug/L		95	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	23.2		ug/L		93	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	56 - 136	2	15
Trichloroethene	1.0	U	25.0	23.6		ug/L		94	61 - 124	3	15

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166933-G-2 MSD
Matrix: Water
Analysis Batch: 528104

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	1.0	U	25.0	22.2		ug/L		89	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*103*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-527590/4
Matrix: Water
Analysis Batch: 527590

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/23/22 20:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*05/23/22 20:08*	*1*

Lab Sample ID: LCS 240-527590/3
Matrix: Water
Analysis Batch: 527590

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	11.6		ug/L		116	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*

Lab Sample ID: 240-166740-B-2 MS
Matrix: Water
Analysis Batch: 527590

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.3		ug/L		113	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-166740-B-2 MSD
Matrix: Water
Analysis Batch: 527590

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-166740-B-2 MSD
Matrix: Water
Analysis Batch: 527590

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

GC/MS VOA

Analysis Batch: 527590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166781-2	MW-68_051622	Total/NA	Water	8260D SIM	
240-166781-3	MW-47_051622	Total/NA	Water	8260D SIM	
240-166781-4	MW-46_051622	Total/NA	Water	8260D SIM	
240-166781-5	DUP-03	Total/NA	Water	8260D SIM	
MB 240-527590/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-527590/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166740-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166740-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 527909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166781-1	TRIP BLANK_110	Total/NA	Water	8260D	
240-166781-2	MW-68_051622	Total/NA	Water	8260D	
240-166781-3	MW-47_051622	Total/NA	Water	8260D	
MB 240-527909/6	Method Blank	Total/NA	Water	8260D	
LCS 240-527909/4	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 528104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166781-4	MW-46_051622	Total/NA	Water	8260D	
240-166781-5	DUP-03	Total/NA	Water	8260D	
MB 240-528104/7	Method Blank	Total/NA	Water	8260D	
LCS 240-528104/5	Lab Control Sample	Total/NA	Water	8260D	
240-166933-D-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-166933-G-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Client Sample ID: TRIP BLANK_110
Lab Sample ID: 240-166781-1
Date Collected: 05/16/22 00:00
Matrix: Water
Date Received: 05/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527909	05/25/22 14:27	SAM	TAL CAN

Client Sample ID: MW-68_051622
Lab Sample ID: 240-166781-2
Date Collected: 05/16/22 12:05
Matrix: Water
Date Received: 05/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527909	05/25/22 18:13	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/24/22 04:19	CS	TAL CAN

Client Sample ID: MW-47_051622
Lab Sample ID: 240-166781-3
Date Collected: 05/16/22 14:00
Matrix: Water
Date Received: 05/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	527909	05/25/22 19:28	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/24/22 04:42	CS	TAL CAN

Client Sample ID: MW-46_051622
Lab Sample ID: 240-166781-4
Date Collected: 05/16/22 15:40
Matrix: Water
Date Received: 05/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528104	05/26/22 19:09	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/24/22 05:05	CS	TAL CAN

Client Sample ID: DUP-03
Lab Sample ID: 240-166781-5
Date Collected: 05/16/22 00:00
Matrix: Water
Date Received: 05/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528104	05/26/22 19:33	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527590	05/24/22 05:29	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166781-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Samantha Hindl	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240		Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP On-Site		Shipping/Tracking No:			
Project Number: 30080642.401.03					
PO # 30080642.401.03					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM			Sample Specific Notes / Special Instructions:
TRIP BLANK_110	5/16/22	—		X						1					N	G	X	X	X	X	X	X				1 Trip Blank
MW-108_051622	5/16/22	12:05		X						6					N	G	X	X	X	X	X	X	X			3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-47_051622	5/16/22	14:00		X						6					N	G	X	X	X	X	X	X	X			11 11
MW-46_051622	5/16/22	15:40		X						6					N	G	X	X	X	X	X	X	X			11 11
DUP-03	5/16/22	—		X						6					N	G	X	X	X	X	X	X	X		EH	11 11

240-166781 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindl	Arcadis	5/16/22 17:10	Novi cold storage	Arcadis	5/16/22 17:10
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	5/17/22 1100	[signature]	FETA	5/17/22 1100
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	FETA	5/17/22 1130			

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5/31/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 166781
Canton Facility

Client Arcadis Site Name Ford LTP
Cooler Received on 5-18-22 Opened on 5-18-22
Cooler unpacked by: DMD
FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off TestAmerica Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC?	(Yes) No DMD 5-18-22
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 210420160	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) 1x40 MW68 and 2x40 DUP03 were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 166781

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.2	~~0.2~~ +0.2	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.1	0.1	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

May 31, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166781-1
Sample date: 2022-05-16
Report received by CADENA: 2022-05-31
Initial Data Verification completed by CADENA: 2022-05-31
Number of Samples:5
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

HSP - GCMS VOC container was received with headspace according to the laboratory submittal case narrative and sample receipt documents. Client sample GCMS VOC results noted should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect.
GCMS VOC-SIM sample -002 - UJ flag - 1,4-dioxane.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

Qualifiers added during verification have been added to the electronic data which is available for download from the CADENA CLMS. Refer to the attached table of analytical results that have been qualified during verification.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia, Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166781-1

Sample Name: MW-68_051622
Lab Sample ID: 2401667812
Sample Date: 5/16/2022

Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC					
OSW-8260DSIM					
1,4-Dioxane	123-91-1	ND	2.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166781-1

		Sample Name:	TRIP BLANK_110				MW-68_051622				MW-47_051622				MW-46_051622				DUP-03			
		Lab Sample ID:	2401667811				2401667812				2401667813				2401667814				2401667815			
		Sample Date:	5/16/2022				5/16/2022				5/16/2022				5/16/2022				5/16/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
OSW-8260D																						
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	24	1.0	ug/l	---	5.8	1.0	ug/l	---	1.1	1.0	ug/l	---	5.8	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	3.8	1.0	ug/l	---	1.6	1.0	ug/l	---	ND	1.0	ug/l	---	1.3	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	1.4	1.0	ug/l	---	17	1.0	ug/l	---	7.5	1.0	ug/l	---	19	1.0	ug/l	---
OSW-8260DSIM																						
1,4-Dioxane	123-91-1						ND	2.0	ug/l	UJ	1.6	2.0	ug/l	J	ND	2.0	ug/l	---	1.9	2.0	ug/l	J

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-166892-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
5/31/2022 4:04:41 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Job ID: 240-166892-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-166892-1

Comments
No additional comments.

Receipt
The samples were received on 5/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.1º C and 0.7º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-166892-1	TRIP BLANK_163	Water	05/17/22 00:00	05/19/22 08:00
240-166892-2	MW-113_051722	Water	05/17/22 09:45	05/19/22 08:00
240-166892-3	MW-199S_051722	Water	05/17/22 10:53	05/19/22 08:00
240-166892-4	MW-19_051722	Water	05/17/22 12:20	05/19/22 08:00
240-166892-5	MW-55D_051722	Water	05/17/22 14:05	05/19/22 08:00
240-166892-6	MW-55_051722	Water	05/17/22 15:30	05/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: TRIP BLANK_163 — Lab Sample ID: 240-166892-1

No Detections.

Client Sample ID: MW-113_051722 — Lab Sample ID: 240-166892-2

No Detections.

Client Sample ID: MW-199S_051722 — Lab Sample ID: 240-166892-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.8		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-19_051722 — Lab Sample ID: 240-166892-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	300		4.0	1.7	ug/L	2		8260D SIM	Total/NA
Trichloroethene	0.83	J	1.0	0.44	ug/L	1		8260D	Total/NA
Vinyl chloride	0.94	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-55D_051722 — Lab Sample ID: 240-166892-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.5	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-55_051722 — Lab Sample ID: 240-166892-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: TRIP BLANK_163

Date Collected: 05/17/22 00:00
Date Received: 05/19/22 08:00

Lab Sample ID: 240-166892-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 14:21	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 14:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 14:21	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 14:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 14:21	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/26/22 14:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*05/26/22 14:21*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*05/26/22 14:21*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/26/22 14:21*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*05/26/22 14:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: MW-113_051722

Date Collected: 05/17/22 09:45
Date Received: 05/19/22 08:00

Lab Sample ID: 240-166892-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/25/22 23:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*66 - 120*		*05/25/22 23:10*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 18:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 18:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 18:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 18:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 18:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/26/22 18:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*05/26/22 18:07*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*05/26/22 18:07*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*05/26/22 18:07*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*05/26/22 18:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: MW-199S_051722
Date Collected: 05/17/22 10:53
Date Received: 05/19/22 08:00

Lab Sample ID: 240-166892-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.8**		2.0	0.86	ug/L			05/25/22 23:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*		*05/25/22 23:35*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 18:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 18:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 18:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 18:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 18:32	1
Vinyl chloride	**1.0**		1.0	0.45	ug/L			05/26/22 18:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*05/26/22 18:32*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*05/26/22 18:32*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*05/26/22 18:32*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*05/26/22 18:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: MW-19_051722
Date Collected: 05/17/22 12:20
Date Received: 05/19/22 08:00

Lab Sample ID: 240-166892-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**300**		4.0	1.7	ug/L			05/26/22 21:15	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*05/26/22 21:15*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 22:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 22:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 22:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 22:17	1
Trichloroethene	**0.83**	**J**	1.0	0.44	ug/L			05/26/22 22:17	1
Vinyl chloride	**0.94**	**J**	1.0	0.45	ug/L			05/26/22 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*		*05/26/22 22:17*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*05/26/22 22:17*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*05/26/22 22:17*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 120*		*05/26/22 22:17*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: MW-55D_051722
Date Collected: 05/17/22 14:05
Date Received: 05/19/22 08:00

Lab Sample ID: 240-166892-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.5	J	2.0	0.86	ug/L			05/26/22 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*		*05/26/22 00:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 19:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 19:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 19:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/26/22 19:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*05/26/22 19:22*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*05/26/22 19:22*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*05/26/22 19:22*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*05/26/22 19:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: MW-55_051722
Date Collected: 05/17/22 15:30
Date Received: 05/19/22 08:00

Lab Sample ID: 240-166892-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/26/22 00:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*05/26/22 00:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 19:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 19:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 19:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/26/22 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/26/22 19:47*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*05/26/22 19:47*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*05/26/22 19:47*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*05/26/22 19:47*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166892-1	TRIP BLANK_163	100	85	98	105
240-166892-2	MW-113_051722	103	82	98	107
240-166892-3	MW-199S_051722	105	84	99	107
240-166892-4	MW-19_051722	106	84	96	110
240-166892-5	MW-55D_051722	103	83	96	108
240-166892-6	MW-55_051722	101	82	97	107
240-166938-B-2 MSD	Matrix Spike Duplicate	99	98	101	104
240-166938-C-2 MS	Matrix Spike	98	95	99	108
LCS 240-528106/4	Lab Control Sample	97	96	100	106
MB 240-528106/6	Method Blank	101	86	97	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-166886-I-3 MS	Matrix Spike	109
240-166886-O-3 MSD	Matrix Spike Duplicate	110
240-166892-2	MW-113_051722	114
240-166892-3	MW-199S_051722	113
240-166892-4	MW-19_051722	83
240-166892-5	MW-55D_051722	112
240-166892-6	MW-55_051722	111
240-166949-F-15 MS	Matrix Spike	87
240-166949-I-15 MSD	Matrix Spike Duplicate	88
LCS 240-527981/3	Lab Control Sample	106
LCS 240-528189/3	Lab Control Sample	88
MB 240-527981/4	Method Blank	107
MB 240-528189/4	Method Blank	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-528106/6
Matrix: Water
Analysis Batch: 528106

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			05/26/22 13:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			05/26/22 13:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 13:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			05/26/22 13:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			05/26/22 13:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/26/22 13:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*05/26/22 13:56*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*05/26/22 13:56*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*05/26/22 13:56*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*05/26/22 13:56*	*1*

Lab Sample ID: LCS 240-528106/4
Matrix: Water
Analysis Batch: 528106

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.9		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	26.9		ug/L		108	77 - 123
Tetrachloroethene	25.0	26.4		ug/L		106	76 - 123
trans-1,2-Dichloroethene	25.0	27.9		ug/L		112	75 - 124
Trichloroethene	25.0	26.4		ug/L		106	70 - 122
Vinyl chloride	12.5	11.5		ug/L		92	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*106*		*73 - 120*

Lab Sample ID: 240-166938-B-2 MSD
Matrix: Water
Analysis Batch: 528106

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	29.6		ug/L		118	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	25.8		ug/L		103	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	25.3		ug/L		101	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	25.0	26.3		ug/L		105	56 - 136	5	15
Trichloroethene	1.0	U	25.0	25.0		ug/L		100	61 - 124	2	15
Vinyl chloride	1.0	U	25.0	22.8		ug/L		91	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166938-B-2 MSD
Matrix: Water
Analysis Batch: 528106

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-166938-C-2 MS
Matrix: Water
Analysis Batch: 528106

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	29.4		ug/L		117	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.9		ug/L		104	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	27.6		ug/L		110	56 - 136
Trichloroethene	1.0	U	25.0	25.4		ug/L		102	61 - 124
Vinyl chloride	1.0	U	25.0	23.0		ug/L		92	43 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*108*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-527981/4
Matrix: Water
Analysis Batch: 527981

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/25/22 19:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*05/25/22 19:50*	*1*

Lab Sample ID: LCS 240-527981/3
Matrix: Water
Analysis Batch: 527981

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.76		ug/L		98	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-166886-I-3 MS
Matrix: Water
Analysis Batch: 527981

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.35		ug/L		93	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-166886-O-3 MSD
Matrix: Water
Analysis Batch: 527981

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.52		ug/L		95	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*

Lab Sample ID: MB 240-528189/4
Matrix: Water
Analysis Batch: 528189

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/26/22 19:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*05/26/22 19:49*	*1*

Lab Sample ID: LCS 240-528189/3
Matrix: Water
Analysis Batch: 528189

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

Lab Sample ID: 240-166949-F-15 MS
Matrix: Water
Analysis Batch: 528189

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	3.0		10.0	13.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

Lab Sample ID: 240-166949-I-15 MSD
Matrix: Water
Analysis Batch: 528189

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	3.0		10.0	13.1		ug/L		101	51 - 153	3	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-166949-I-15 MSD
Matrix: Water
Analysis Batch: 528189

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

GC/MS VOA

Analysis Batch: 527981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166892-2	MW-113_051722	Total/NA	Water	8260D SIM	
240-166892-3	MW-199S_051722	Total/NA	Water	8260D SIM	
240-166892-5	MW-55D_051722	Total/NA	Water	8260D SIM	
240-166892-6	MW-55_051722	Total/NA	Water	8260D SIM	
MB 240-527981/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-527981/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166886-I-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166886-O-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 528106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166892-1	TRIP BLANK_163	Total/NA	Water	8260D	
240-166892-2	MW-113_051722	Total/NA	Water	8260D	
240-166892-3	MW-199S_051722	Total/NA	Water	8260D	
240-166892-4	MW-19_051722	Total/NA	Water	8260D	
240-166892-5	MW-55D_051722	Total/NA	Water	8260D	
240-166892-6	MW-55_051722	Total/NA	Water	8260D	
MB 240-528106/6	Method Blank	Total/NA	Water	8260D	
LCS 240-528106/4	Lab Control Sample	Total/NA	Water	8260D	
240-166938-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-166938-C-2 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 528189

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-166892-4	MW-19_051722	Total/NA	Water	8260D SIM	
MB 240-528189/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-528189/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-166949-F-15 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-166949-I-15 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Client Sample ID: TRIP BLANK_163
Lab Sample ID: 240-166892-1
Date Collected: 05/17/22 00:00
Matrix: Water
Date Received: 05/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528106	05/26/22 14:21	SAM	TAL CAN

Client Sample ID: MW-113_051722
Lab Sample ID: 240-166892-2
Date Collected: 05/17/22 09:45
Matrix: Water
Date Received: 05/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528106	05/26/22 18:07	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527981	05/25/22 23:10	CS	TAL CAN

Client Sample ID: MW-199S_051722
Lab Sample ID: 240-166892-3
Date Collected: 05/17/22 10:53
Matrix: Water
Date Received: 05/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528106	05/26/22 18:32	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527981	05/25/22 23:35	CS	TAL CAN

Client Sample ID: MW-19_051722
Lab Sample ID: 240-166892-4
Date Collected: 05/17/22 12:20
Matrix: Water
Date Received: 05/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528106	05/26/22 22:17	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		2	528189	05/26/22 21:15	CS	TAL CAN

Client Sample ID: MW-55D_051722
Lab Sample ID: 240-166892-5
Date Collected: 05/17/22 14:05
Matrix: Water
Date Received: 05/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528106	05/26/22 19:22	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527981	05/26/22 00:24	CS	TAL CAN

Client Sample ID: MW-55_051722
Lab Sample ID: 240-166892-6
Date Collected: 05/17/22 15:30
Matrix: Water
Date Received: 05/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528106	05/26/22 19:47	SAM	TAL CAN
Total/NA	Analysis	8260D SIM		1	527981	05/26/22 00:49	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-166892-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500		Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client: Lab sampling:
Phone: 248-994-2240		Method of Shipment/Carrier:			Job/SDG No:
Project Name: Ford LTP On-Site		Shipping/Tracking No:			
Project Number: 30080642.401.03					
PO # 30080642.401.03					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_163	5/17/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-113_051722	5/17/22	945		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-1995_051722	5/17/22	1053		6						6					N	G	X	X	X	X	X	X	X	" "
MW-19_051722	5/17/22	1220		6						6					N	G	X	X	X	X	X	X	X	" "
MW-55D_051722	5/17/22	1405		6						6					N	G	X	X	X	X	X	X	X	" "
MW-55_051722	5/17/22	1530		6						6					N	G	X	X	X	X	X	X	X	" "

240-166892 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant

osal (A fee may be assessed if samples are retained longer than 1 month)
to Client ☑ Disposal By Lab ☐ Archive For Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	5/17/22 1645	Novi Cold Storage	Arcadis	5/17/22 1645
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	5/18/22 0950		FEMA	5/18/22 0950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	FEMA	5/18/22		EETNC	5-19-22 800

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5/31/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 16689**
Canton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Danny Boyd

Cooler Received on 5-19-22 Opened on 5-19-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp._____ °C Corrected Cooler Temp._____ °C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____ °C Corrected Cooler Temp._____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 10 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC157842
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.1	0.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.7	0.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

June 01, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 166892-1
Sample date: 2022-05-17
Report received by CADENA: 2022-05-31
Initial Data Verification completed by CADENA: 2022-06-01
Number of Samples:6
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 166892-1

		Sample Name:	TRIP BLANK_163				MW-113_051722				MW-199S_051722				MW-19_051722				MW-55D_051722				MW-55_051722			
		Lab Sample ID:	2401668921				2401668922				2401668923				2401668924				2401668925				2401668926			
		Sample Date:	5/17/2022				5/17/2022				5/17/2022				5/17/2022				5/17/2022				5/17/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.83	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.0	1.0	ug/l	---	0.94	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	2.8	2.0	ug/l	---	300	4.0	ug/l	---	1.5	2.0	ug/l	J	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-167068-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
6/6/2022 11:47:20 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-167068-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-167068-1

Comments
No additional comments.

Receipt
The samples were received on 5/21/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.9º C and 1.2º C.

GC/MS VOA
Method 8260D SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-197S_051922 (240-167068-3). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-167068-1	TRIP BLANK_38	Water	05/19/22 00:00	05/21/22 08:00
240-167068-2	MW-124_051922	Water	05/19/22 08:47	05/21/22 08:00
240-167068-3	MW-197S_051922	Water	05/19/22 10:00	05/21/22 08:00
240-167068-4	MW-09_051922	Water	05/19/22 11:03	05/21/22 08:00
240-167068-5	MW-53_051922	Water	05/19/22 12:12	05/21/22 08:00
240-167068-6	MW-58_051922	Water	05/19/22 14:00	05/21/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: TRIP BLANK_38 — Lab Sample ID: 240-167068-1

No Detections.

Client Sample ID: MW-124_051922 — Lab Sample ID: 240-167068-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.5		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-197S_051922 — Lab Sample ID: 240-167068-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	21		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.4		1.0	0.51	ug/L	1		8260D	Total/NA
Trichloroethene	64		1.0	0.44	ug/L	1		8260D	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-09_051922 — Lab Sample ID: 240-167068-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.5		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.99	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-53_051922 — Lab Sample ID: 240-167068-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-58_051922 — Lab Sample ID: 240-167068-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.3		2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: TRIP BLANK_38

Date Collected: 05/19/22 00:00
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 15:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 15:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 15:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 15:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 15:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 15:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*06/02/22 15:07*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*06/02/22 15:07*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*06/02/22 15:07*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*06/02/22 15:07*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: MW-124_051922

Date Collected: 05/19/22 08:47
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/01/22 03:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*06/01/22 03:08*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 15:32	1
cis-1,2-Dichloroethene	**2.5**		1.0	0.46	ug/L			06/02/22 15:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 15:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 15:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 15:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 15:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*06/02/22 15:32*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*06/02/22 15:32*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*06/02/22 15:32*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*06/02/22 15:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: MW-197S_051922

Date Collected: 05/19/22 10:00
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			06/01/22 03:32	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*06/01/22 03:32*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 22:40	1
cis-1,2-Dichloroethene	**21**		1.0	0.46	ug/L			06/02/22 22:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 22:40	1
trans-1,2-Dichloroethene	**1.4**		1.0	0.51	ug/L			06/02/22 22:40	1
Trichloroethene	**64**		1.0	0.44	ug/L			06/02/22 22:40	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			06/02/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*06/02/22 22:40*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*06/02/22 22:40*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*06/02/22 22:40*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*06/02/22 22:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: MW-09_051922
Date Collected: 05/19/22 11:03
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**5.5**		2.0	0.86	ug/L			06/01/22 03:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*06/01/22 03:56*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 16:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 16:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 16:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 16:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 16:23	1
Vinyl chloride	**0.99**	**J**	1.0	0.45	ug/L			06/02/22 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*62 - 137*		*06/02/22 16:23*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*06/02/22 16:23*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*06/02/22 16:23*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*06/02/22 16:23*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: MW-53_051922

Date Collected: 05/19/22 12:12
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-5

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			06/01/22 04:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*		*06/01/22 04:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 16:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 16:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*06/02/22 16:49*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*06/02/22 16:49*	*1*
Toluene-d8 (Surr)	*80*		*78 - 122*		*06/02/22 16:49*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*06/02/22 16:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: MW-58_051922
Date Collected: 05/19/22 14:00
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.3		2.0	0.86	ug/L			06/01/22 04:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*06/01/22 04:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 17:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 17:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 17:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 17:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 17:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 17:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*06/02/22 17:14*	*1*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*06/02/22 17:14*	*1*
Toluene-d8 (Surr)	*78*		*78 - 122*		*06/02/22 17:14*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*06/02/22 17:14*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166988-A-25 MS	Matrix Spike	80	90	81	91
240-167068-1	TRIP BLANK_38	85	85	80	88
240-167068-2	MW-124_051922	85	86	81	91
240-167068-3	MW-197S_051922	85	83	81	93
240-167068-4	MW-09_051922	82	83	80	90
240-167068-5	MW-53_051922	84	83	80	91
240-167068-6	MW-58_051922	84	84	78	92
LCS 240-528896/5	Lab Control Sample	77	91	81	90
MB 240-528896/8	Method Blank	83	85	81	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-167067-G-2 MS	Matrix Spike	88
240-167067-M-2 MSD	Matrix Spike Duplicate	89
240-167068-2	MW-124_051922	87
240-167068-3	MW-197S_051922	84
240-167068-4	MW-09_051922	85
240-167068-5	MW-53_051922	83
240-167068-6	MW-58_051922	88
LCS 240-528626/3	Lab Control Sample	86
MB 240-528626/4	Method Blank	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-528896/8
Matrix: Water
Analysis Batch: 528896

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 13:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*06/02/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*06/02/22 13:52*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*06/02/22 13:52*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*06/02/22 13:52*	*1*

Lab Sample ID: LCS 240-528896/5
Matrix: Water
Analysis Batch: 528896

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.7		ug/L		93	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	20.6		ug/L		103	76 - 123
trans-1,2-Dichloroethene	20.0	20.1		ug/L		100	75 - 124
Trichloroethene	20.0	21.3		ug/L		107	70 - 122
Vinyl chloride	20.0	17.7		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*81*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-166988-A-25 MS
Matrix: Water
Analysis Batch: 528896

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	320		250	504		ug/L		73	66 - 128
Tetrachloroethene	13	U	250	219		ug/L		87	62 - 131
trans-1,2-Dichloroethene	13	U	250	229		ug/L		92	56 - 136
Trichloroethene	13	U	250	233		ug/L		93	61 - 124
Vinyl chloride	340		250	467		ug/L		50	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*81*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-528626/4
Matrix: Water
Analysis Batch: 528626

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			05/31/22 20:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*05/31/22 20:47*	*1*

Lab Sample ID: LCS 240-528626/3
Matrix: Water
Analysis Batch: 528626

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	11.7		ug/L		117	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-167067-G-2 MS
Matrix: Water
Analysis Batch: 528626

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

Lab Sample ID: 240-167067-M-2 MSD
Matrix: Water
Analysis Batch: 528626

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.9		ug/L		119	51 - 153	9	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

GC/MS VOA

Analysis Batch: 528626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167068-2	MW-124_051922	Total/NA	Water	8260D SIM	
240-167068-3	MW-197S_051922	Total/NA	Water	8260D SIM	
240-167068-4	MW-09_051922	Total/NA	Water	8260D SIM	
240-167068-5	MW-53_051922	Total/NA	Water	8260D SIM	
240-167068-6	MW-58_051922	Total/NA	Water	8260D SIM	
MB 240-528626/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-528626/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-167067-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-167067-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 528896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167068-1	TRIP BLANK_38	Total/NA	Water	8260D	
240-167068-2	MW-124_051922	Total/NA	Water	8260D	
240-167068-3	MW-197S_051922	Total/NA	Water	8260D	
240-167068-4	MW-09_051922	Total/NA	Water	8260D	
240-167068-5	MW-53_051922	Total/NA	Water	8260D	
240-167068-6	MW-58_051922	Total/NA	Water	8260D	
MB 240-528896/8	Method Blank	Total/NA	Water	8260D	
LCS 240-528896/5	Lab Control Sample	Total/NA	Water	8260D	
240-166988-A-25 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Client Sample ID: TRIP BLANK_38
Date Collected: 05/19/22 00:00
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 15:07	TJL1	TAL CAN

Client Sample ID: MW-124_051922
Date Collected: 05/19/22 08:47
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 15:32	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528626	06/01/22 03:08	CS	TAL CAN

Client Sample ID: MW-197S_051922
Date Collected: 05/19/22 10:00
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 22:40	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		2	528626	06/01/22 03:32	CS	TAL CAN

Client Sample ID: MW-09_051922
Date Collected: 05/19/22 11:03
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 16:23	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528626	06/01/22 03:56	CS	TAL CAN

Client Sample ID: MW-53_051922
Date Collected: 05/19/22 12:12
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 16:49	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528626	06/01/22 04:20	CS	TAL CAN

Client Sample ID: MW-58_051922
Date Collected: 05/19/22 14:00
Date Received: 05/21/22 08:00

Lab Sample ID: 240-167068-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 17:14	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528626	06/01/22 04:43	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167068-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	06-02-22
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
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Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_38	5/19/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-124_051922	5/19/22	847		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-1975_051922	5/19/22	1000		6						6					N	G	X	X	X	X	X	X	X	" "
MW-09_051922	5/19/22	1103		6						6					N	G	X	X	X	X	X	X	X	" "
MW-53_051922	5/19/22	1212		6						6					N	G	X	X	X	X	X	X	X	" "
MW-58_051922	5/19/22	1400		6						6					N	G	X	X	X	X	X	X	X	" "

SG 5/19

240-167068 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be: ☑ Return to Client

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	5/19/22 1615	Novi Cold Storage	Arcadis	5/19/22 1615
	Company: ARCADIS	Date/Time: 5/20/22 1000	Received by:	Company: CETI	Date/Time: 5/20/22 1000
	Company: CET	Date/Time: 5/20/22 1000	Received in Laboratory by:	Company: CETNC	Date/Time: 5-21-22 0800

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6/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 167068
Barberton Facility

Client Arcadis Site Name Ford LTP

Cooler unpacked by: Dme

Cooler Received on 5-21-22 Opened on 5-23-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC157842**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 167068

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	0.9	0.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

June 06, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 167068-1
Sample date: 2022-05-19
Report received by CADENA: 2022-06-06
Initial Data Verification completed by CADENA: 2022-06-06
Number of Samples:6
Sample Matrices: Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 167068-1

		Sample Name:	TRIP BLANK_38				MW-124_051922				MW-197S_051922				MW-09_051922				MW-53_051922				MW-58_051922			
		Lab Sample ID:	2401670681				2401670682				2401670683				2401670684				2401670685				2401670686			
		Sample Date:	5/19/2022				5/19/2022				5/19/2022				5/19/2022				5/19/2022				5/19/2022			
				Report		Valid		Report		Valid		Report		Valid		Report		Valid		Report		Valid		Report		Valid
Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC																									
OSW-8260D																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	2.5	1.0	ug/l	---	21	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.4	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	64	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	0.99	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	4.0	ug/l	---	5.5	2.0	ug/l	---	1.4	2.0	ug/l	J	4.3	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-167148-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
6/8/2022 9:34:10 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-167148-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-167148-1

Comments
No additional comments.

Receipt
The samples were received on 5/24/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2º C and 2.2º C.

GC/MS VOA
Method 8260D SIM: The matrix spike/matrix spike duplicate (MS/MSD) for 240-528806 was not reported due to instrument failure.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-167148-1	TRIP BLANK_32	Water	05/21/22 00:00	05/24/22 10:00
240-167148-2	MW-52_052122	Water	05/21/22 10:36	05/24/22 10:00
240-167148-3	MW-120_052122	Water	05/21/22 12:21	05/24/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Client Sample ID: TRIP BLANK_32 — Lab Sample ID: 240-167148-1

No Detections.

Client Sample ID: MW-52_052122 — Lab Sample ID: 240-167148-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.6		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-120_052122 — Lab Sample ID: 240-167148-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2.8		1.0	0.44	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Client Sample ID: TRIP BLANK_32

Date Collected: 05/21/22 00:00
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167148-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 23:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 23:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 23:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 23:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 23:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 23:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*06/02/22 23:22*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*06/02/22 23:22*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*06/02/22 23:22*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*06/02/22 23:22*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Client Sample ID: MW-52_052122

Date Collected: 05/21/22 10:36
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167148-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.1**	**J**	2.0	0.86	ug/L			06/01/22 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*06/01/22 20:44*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 23:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 23:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 23:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 23:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 23:45	1
Vinyl chloride	**1.6**		1.0	0.45	ug/L			06/02/22 23:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*06/02/22 23:45*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*06/02/22 23:45*	*1*
Toluene-d8 (Surr)	*87*		*78 - 122*		*06/02/22 23:45*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*06/02/22 23:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Client Sample ID: MW-120_052122

Date Collected: 05/21/22 12:21
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167148-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/02/22 20:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*06/02/22 20:13*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 01:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/03/22 01:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 01:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/03/22 01:18	1
Trichloroethene	**2.8**		1.0	0.44	ug/L			06/03/22 01:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/03/22 01:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*06/03/22 01:18*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*06/03/22 01:18*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*06/03/22 01:18*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*06/03/22 01:18*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-167148-1	TRIP BLANK_32	88	103	89	83
240-167148-2	MW-52_052122	85	101	87	81
240-167148-2 MS	MW-52-MS_052122	85	107	88	87
240-167148-2 MSD	MW-52-MSD_052122	78	94	81	79
240-167148-3	MW-120_052122	94	110	97	91
LCS 240-528959/5	Lab Control Sample	83	101	85	84
MB 240-528959/8	Method Blank	85	98	85	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-167148-2	MW-52_052122	104
240-167148-2 MS	MW-52-MS_052122	106
240-167148-2 MSD	MW-52-MSD_052122	105
240-167148-3	MW-120_052122	91
LCS 240-528805/3	Lab Control Sample	107
LCS 240-528806/3	Lab Control Sample	85
MB 240-528805/4	Method Blank	107
MB 240-528806/4	Method Blank	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-528959/8
Matrix: Water
Analysis Batch: 528959

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 17:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 17:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 17:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 17:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*06/02/22 17:29*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*06/02/22 17:29*	*1*
Toluene-d8 (Surr)	*85*		*78 - 122*		*06/02/22 17:29*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*06/02/22 17:29*	*1*

Lab Sample ID: LCS 240-528959/5
Matrix: Water
Analysis Batch: 528959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.5		ug/L		97	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		94	77 - 123
Tetrachloroethene	20.0	18.2		ug/L		91	76 - 123
trans-1,2-Dichloroethene	20.0	18.1		ug/L		90	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	21.3		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*85*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-167148-2 MS
Matrix: Water
Analysis Batch: 528959

Client Sample ID: MW-52-MS_052122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	20.0	17.6		ug/L		88	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	56 - 136
Trichloroethene	1.0	U	20.0	18.2		ug/L		91	61 - 124
Vinyl chloride	1.6		20.0	23.1		ug/L		107	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*88*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-167148-2 MS
Matrix: Water
Analysis Batch: 528959

Client Sample ID: MW-52-MS_052122
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Lab Sample ID: 240-167148-2 MSD
Matrix: Water
Analysis Batch: 528959

Client Sample ID: MW-52-MSD_052122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.7		ug/L		88	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	17.3		ug/L		86	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		84	56 - 136	5	15
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124	1	15
Vinyl chloride	1.6		20.0	22.1		ug/L		102	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*78*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*81*		*78 - 122*
Dibromofluoromethane (Surr)	*79*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-528805/4
Matrix: Water
Analysis Batch: 528805

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/01/22 19:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*06/01/22 19:54*	*1*

Lab Sample ID: LCS 240-528805/3
Matrix: Water
Analysis Batch: 528805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*

Lab Sample ID: 240-167148-2 MS
Matrix: Water
Analysis Batch: 528805

Client Sample ID: MW-52-MS_052122
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	1.1	J	10.0	13.2		ug/L		121	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-167148-2 MSD — **Client Sample ID: MW-52-MSD_052122**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 528805

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	1.1	J	10.0	13.1		ug/L		120	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

Lab Sample ID: MB 240-528806/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 528806

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/02/22 19:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*06/02/22 19:25*	*1*

Lab Sample ID: LCS 240-528806/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 528806

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	11.0		ug/L		110	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

GC/MS VOA

Analysis Batch: 528805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167148-2	MW-52_052122	Total/NA	Water	8260D SIM	
MB 240-528805/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-528805/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-167148-2 MS	MW-52-MS_052122	Total/NA	Water	8260D SIM	
240-167148-2 MSD	MW-52-MSD_052122	Total/NA	Water	8260D SIM	

Analysis Batch: 528806

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167148-3	MW-120_052122	Total/NA	Water	8260D SIM	
MB 240-528806/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-528806/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 528959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167148-1	TRIP BLANK_32	Total/NA	Water	8260D	
240-167148-2	MW-52_052122	Total/NA	Water	8260D	
240-167148-3	MW-120_052122	Total/NA	Water	8260D	
MB 240-528959/8	Method Blank	Total/NA	Water	8260D	
LCS 240-528959/5	Lab Control Sample	Total/NA	Water	8260D	
240-167148-2 MS	MW-52-MS_052122	Total/NA	Water	8260D	
240-167148-2 MSD	MW-52-MSD_052122	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Client Sample ID: TRIP BLANK_32

Lab Sample ID: 240-167148-1
Matrix: Water
Date Collected: 05/21/22 00:00
Date Received: 05/24/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528959	06/02/22 23:22	TJL1	TAL CAN

Client Sample ID: MW-52_052122

Lab Sample ID: 240-167148-2
Matrix: Water
Date Collected: 05/21/22 10:36
Date Received: 05/24/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528959	06/02/22 23:45	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528805	06/01/22 20:44	CS	TAL CAN

Client Sample ID: MW-120_052122

Lab Sample ID: 240-167148-3
Matrix: Water
Date Collected: 05/21/22 12:21
Date Received: 05/24/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528959	06/03/22 01:18	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528806	06/02/22 20:13	CS	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167148-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_32	5/21/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-52-052122	5/21/22	10:36		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-52-MS-052122	5/21/22	10:36		X						6					N	G	X	X	X	X	X	X	X	RUN MS
MW-52-MSD-052122	5/21/22	10:36		X						6					N	G	X	X	X	X	X	X	X	RUN MSD
MW-120-052122	5/21/22	12:21		X						6					N	G	X	X	X	X	X	X	X	

240-167148 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Gary Schafer	Arcadis	5/21/22 1320	Novi Cold Storage	Arcadis	5/21/22 1320
	ARCADIS	5/23/22 0850	Jen Hall	EETA	5/23/22 0850
Jen Hall	EETA	5-23-22 854	Received in Laboratory by: M. A. D.	Company: EETN	Date/Time: 5/24/22 10:00

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6/8/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 167148
Canton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. A. A.

Cooler Received on 5/24/22 Opened on 5/24/22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# **HC157842**
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 167148

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.2	2.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

June 08, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 167148-1
Sample date: 2022-05-21
Report received by CADENA: 2022-06-08
Initial Data Verification completed by CADENA: 2022-06-08
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 167148-1

		Sample Name:	TRIP BLANK_32				MW-52_052122				MW-120_052122			
		Lab Sample ID:	2401671481				2401671482				2401671483			
		Sample Date:	5/21/2022				5/21/2022				5/21/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC														
OSW-8260D														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.8	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	1.6	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM														
1,4-Dioxane	123-91-1						1.1	2.0	ug/l	J	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-167152-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
6/8/2022 9:35:14 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Job ID: 240-167152-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-167152-1

Comments
No additional comments.

Receipt
The samples were received on 5/24/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2º C and 2.2º C.

GC/MS VOA
Method 8260D: Method required MS/MSD were prepared and analyzed at required batch frequency for analytical batch 240-529115 using samples from other sites, and are not reported with this project.

Method 8260D SIM: The matrix spike/matrix spike duplicate (MS/MSD) for 240-528806 was not reported due to instrument failure.

Method 8260D SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-56_052122 (240-167152-5). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-167152-1	TRIP BLANK_41	Water	05/21/22 00:00	05/24/22 10:00
240-167152-2	MW-210S_052122	Water	05/21/22 09:25	05/24/22 10:00
240-167152-3	MW-34_052122	Water	05/21/22 13:15	05/24/22 10:00
240-167152-4	MW-43_052122	Water	05/21/22 14:15	05/24/22 10:00
240-167152-5	MW-56_052122	Water	05/21/22 15:18	05/24/22 10:00
240-167152-6	DUP-04	Water	05/21/22 00:00	05/24/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: TRIP BLANK_41 — Lab Sample ID: 240-167152-1

No Detections.

Client Sample ID: MW-210S_052122 — Lab Sample ID: 240-167152-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	8.9		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.1		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	3.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-34_052122 — Lab Sample ID: 240-167152-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.1		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.54	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-43_052122 — Lab Sample ID: 240-167152-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.9	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-56_052122 — Lab Sample ID: 240-167152-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.75	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-04 — Lab Sample ID: 240-167152-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: TRIP BLANK_41

Date Collected: 05/21/22 00:00
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 01:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/03/22 01:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 01:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/03/22 01:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 01:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/03/22 01:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*06/03/22 01:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*06/03/22 01:42*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*06/03/22 01:42*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*06/03/22 01:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: MW-210S_052122

Date Collected: 05/21/22 09:25
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/03/22 04:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*06/03/22 04:36*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 02:05	1
cis-1,2-Dichloroethene	**8.9**		1.0	0.46	ug/L			06/03/22 02:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 02:05	1
trans-1,2-Dichloroethene	**1.1**		1.0	0.51	ug/L			06/03/22 02:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 02:05	1
Vinyl chloride	**3.5**		1.0	0.45	ug/L			06/03/22 02:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*06/03/22 02:05*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*06/03/22 02:05*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*06/03/22 02:05*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*06/03/22 02:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: MW-34_052122
Date Collected: 05/21/22 13:15
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.1**		2.0	0.86	ug/L			06/03/22 04:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*06/03/22 04:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 02:28	1
cis-1,2-Dichloroethene	**0.54**	**J**	1.0	0.46	ug/L			06/03/22 02:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 02:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/03/22 02:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 02:28	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			06/03/22 02:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*06/03/22 02:28*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*06/03/22 02:28*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*06/03/22 02:28*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*06/03/22 02:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: MW-43_052122
Date Collected: 05/21/22 14:15
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.9	J	2.0	0.86	ug/L			06/03/22 05:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*06/03/22 05:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 19:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/03/22 19:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 19:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/03/22 19:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 19:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/03/22 19:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*06/03/22 19:25*	*1*
4-Bromofluorobenzene (Surr)	*111*		*56 - 136*		*06/03/22 19:25*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*06/03/22 19:25*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*06/03/22 19:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: MW-56_052122
Date Collected: 05/21/22 15:18
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			06/03/22 05:47	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*06/03/22 05:47*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 19:48	1
cis-1,2-Dichloroethene	**0.75**	**J**	1.0	0.46	ug/L			06/03/22 19:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 19:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/03/22 19:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 19:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/03/22 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*06/03/22 19:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*06/03/22 19:48*	*1*
Toluene-d8 (Surr)	*84*		*78 - 122*		*06/03/22 19:48*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*06/03/22 19:48*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: DUP-04
Date Collected: 05/21/22 00:00
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			06/03/22 06:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*06/03/22 06:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 20:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/03/22 20:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 20:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/03/22 20:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 20:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/03/22 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*06/03/22 20:12*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*06/03/22 20:12*	*1*
Toluene-d8 (Surr)	*84*		*78 - 122*		*06/03/22 20:12*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*06/03/22 20:12*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-167148-E-2 MS	Matrix Spike	85	107	88	87
240-167148-H-2 MSD	Matrix Spike Duplicate	78	94	81	79
240-167152-1	TRIP BLANK_41	90	102	89	85
240-167152-2	MW-210S_052122	88	103	89	88
240-167152-3	MW-34_052122	96	111	100	91
240-167152-4	MW-43_052122	94	111	94	88
240-167152-5	MW-56_052122	86	97	84	82
240-167152-6	DUP-04	90	99	84	82
LCS 240-528959/5	Lab Control Sample	83	101	85	84
LCS 240-529115/5	Lab Control Sample	84	105	88	87
MB 240-528959/8	Method Blank	85	98	85	80
MB 240-529115/8	Method Blank	83	98	85	83

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-167152-2	MW-210S_052122	86
240-167152-3	MW-34_052122	88
240-167152-4	MW-43_052122	89
240-167152-5	MW-56_052122	91
240-167152-6	DUP-04	89
LCS 240-528806/3	Lab Control Sample	85
MB 240-528806/4	Method Blank	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-528959/8
Matrix: Water
Analysis Batch: 528959

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 17:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 17:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 17:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 17:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 17:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 17:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*06/02/22 17:29*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*06/02/22 17:29*	*1*
Toluene-d8 (Surr)	*85*		*78 - 122*		*06/02/22 17:29*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*06/02/22 17:29*	*1*

Lab Sample ID: LCS 240-528959/5
Matrix: Water
Analysis Batch: 528959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.5		ug/L		97	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		94	77 - 123
Tetrachloroethene	20.0	18.2		ug/L		91	76 - 123
trans-1,2-Dichloroethene	20.0	18.1		ug/L		90	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	21.3		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*85*		*78 - 122*
Dibromofluoromethane (Surr)	*84*		*73 - 120*

Lab Sample ID: 240-167148-E-2 MS
Matrix: Water
Analysis Batch: 528959

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	20.0	17.6		ug/L		88	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	56 - 136
Trichloroethene	1.0	U	20.0	18.2		ug/L		91	61 - 124
Vinyl chloride	1.6		20.0	23.1		ug/L		107	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*88*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-167148-E-2 MS
Matrix: Water
Analysis Batch: 528959

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	87		73 - 120

Lab Sample ID: 240-167148-H-2 MSD
Matrix: Water
Analysis Batch: 528959

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.7		ug/L		88	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	17.3		ug/L		86	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		84	56 - 136	5	15
Trichloroethene	1.0	U	20.0	18.0		ug/L		90	61 - 124	1	15
Vinyl chloride	1.6		20.0	22.1		ug/L		102	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		62 - 137
4-Bromofluorobenzene (Surr)	94		56 - 136
Toluene-d8 (Surr)	81		78 - 122
Dibromofluoromethane (Surr)	79		73 - 120

Lab Sample ID: MB 240-529115/8
Matrix: Water
Analysis Batch: 529115

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/03/22 13:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/03/22 13:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 13:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/03/22 13:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/03/22 13:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/03/22 13:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		62 - 137		06/03/22 13:55	1
4-Bromofluorobenzene (Surr)	98		56 - 136		06/03/22 13:55	1
Toluene-d8 (Surr)	85		78 - 122		06/03/22 13:55	1
Dibromofluoromethane (Surr)	83		73 - 120		06/03/22 13:55	1

Lab Sample ID: LCS 240-529115/5
Matrix: Water
Analysis Batch: 529115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.6		ug/L		98	63 - 134
cis-1,2-Dichloroethene	20.0	18.7		ug/L		93	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		94	76 - 123
trans-1,2-Dichloroethene	20.0	17.9		ug/L		90	75 - 124
Trichloroethene	20.0	19.4		ug/L		97	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-529115/5
Matrix: Water
Analysis Batch: 529115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	21.3		ug/L		106	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*
Toluene-d8 (Surr)	*88*		*78 - 122*
Dibromofluoromethane (Surr)	*87*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-528806/4
Matrix: Water
Analysis Batch: 528806

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/02/22 19:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*06/02/22 19:25*	*1*

Lab Sample ID: LCS 240-528806/3
Matrix: Water
Analysis Batch: 528806

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	11.0		ug/L		110	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

GC/MS VOA

Analysis Batch: 528806

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167152-2	MW-210S_052122	Total/NA	Water	8260D SIM	
240-167152-3	MW-34_052122	Total/NA	Water	8260D SIM	
240-167152-4	MW-43_052122	Total/NA	Water	8260D SIM	
240-167152-5	MW-56_052122	Total/NA	Water	8260D SIM	
240-167152-6	DUP-04	Total/NA	Water	8260D SIM	
MB 240-528806/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-528806/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Analysis Batch: 528959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167152-1	TRIP BLANK_41	Total/NA	Water	8260D	
240-167152-2	MW-210S_052122	Total/NA	Water	8260D	
240-167152-3	MW-34_052122	Total/NA	Water	8260D	
MB 240-528959/8	Method Blank	Total/NA	Water	8260D	
LCS 240-528959/5	Lab Control Sample	Total/NA	Water	8260D	
240-167148-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-167148-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 529115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167152-4	MW-43_052122	Total/NA	Water	8260D	
240-167152-5	MW-56_052122	Total/NA	Water	8260D	
240-167152-6	DUP-04	Total/NA	Water	8260D	
MB 240-529115/8	Method Blank	Total/NA	Water	8260D	
LCS 240-529115/5	Lab Control Sample	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Client Sample ID: TRIP BLANK_41
Date Collected: 05/21/22 00:00
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528959	06/03/22 01:42	TJL1	TAL CAN

Client Sample ID: MW-210S_052122
Date Collected: 05/21/22 09:25
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528959	06/03/22 02:05	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528806	06/03/22 04:36	CS	TAL CAN

Client Sample ID: MW-34_052122
Date Collected: 05/21/22 13:15
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528959	06/03/22 02:28	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528806	06/03/22 04:59	CS	TAL CAN

Client Sample ID: MW-43_052122
Date Collected: 05/21/22 14:15
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	529115	06/03/22 19:25	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528806	06/03/22 05:23	CS	TAL CAN

Client Sample ID: MW-56_052122
Date Collected: 05/21/22 15:18
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	529115	06/03/22 19:48	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		2	528806	06/03/22 05:47	CS	TAL CAN

Client Sample ID: DUP-04
Date Collected: 05/21/22 00:00
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167152-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	529115	06/03/22 20:12	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	528806	06/03/22 06:11	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167152-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_41	5/21/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-21OS-052122	5/21/22	925		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-34-052122	5/21/22	1315		6						6					N	G	X	X	X	X	X	X	X	" "
MW-43-052122	5/21/22	1415		6						6					N	G	X	X	X	X	X	X	X	" "
MW-56-052122	5/21/22	1518		6						6					N	G	X	X	X	X	X	X	X	" "
DUP-04	5/21/22	—		6						6					N	G	X	X	X	X	X	X	X	" "
56	5/21																							

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may ... Return to Client ☑ ... Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	5/21/22 1645	Novi Cold storage	Arcadis	5/21/22 1645
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	5/23/22 0850		EEtA	5/23/22 0850
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEtA	5/23/22 854	M. D.	EETMC	5/24/22 10:00

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6/8/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 167152**
Canton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. A. A.

Cooler Received on 5/24/22 Opened on 5/24/22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form

IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 167152

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.2	2.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

June 08, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 167152-1
Sample date: 2022-05-21
Report received by CADENA: 2022-06-08
Initial Data Verification completed by CADENA: 2022-06-08
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA the National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 167152-1

		Sample Name:	TRIP BLANK_41				MW-210S_052122				MW-34_052122				MW-43_052122				MW-56_052122				DUP-04			
		Lab Sample ID:	2401671521				2401671522				2401671523				2401671524				2401671525				2401671526			
		Sample Date:	5/21/2022				5/21/2022				5/21/2022				5/21/2022				5/21/2022				5/21/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
	OSW-8260D																									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	8.9	1.0	ug/l	---	0.54	1.0	ug/l	J	ND	1.0	ug/l	---	0.75	1.0	ug/l	J	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	1.1	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	3.5	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																									
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	4.1	2.0	ug/l	---	1.9	2.0	ug/l	J	ND	4.0	ug/l	---	1.6	2.0	ug/l	J

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-167154-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
6/8/2022 9:32:33 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Job ID: 240-167154-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-167154-1

Comments
No additional comments.

Receipt
The samples were received on 5/24/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2º C and 2.2º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-528862 was outside the method criteria for multiple analytes. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated: TRIP BLANK_37 (240-167154-1), MW-03_051922 (240-167154-2) and (CCVIS 240-528862/3).

Method 8260D: The MSD for batch 240-528896 was analyzed outside of the tune time, due to an instrument fault. This is a batch QC sample; therefore, the data have been reported.

Method 8260D SIM: The following samples were analyzed outside of analytical holding time due to instrument malfunction: MW-03_051922 (240-167154-2), MW-45_051922 (240-167154-3), MW-70_051922 (240-167154-4), MW-71_052022 (240-167154-5) and MW-122_052022 (240-167154-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-167154-1	TRIP BLANK_37	Water	05/19/22 00:00	05/24/22 10:00
240-167154-2	MW-03_051922	Water	05/19/22 14:36	05/24/22 10:00
240-167154-3	MW-45_051922	Water	05/19/22 12:40	05/24/22 10:00
240-167154-4	MW-70_051922	Water	05/19/22 11:10	05/24/22 10:00
240-167154-5	MW-71_052022	Water	05/20/22 12:28	05/24/22 10:00
240-167154-6	MW-122_052022	Water	05/20/22 11:05	05/24/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Client Sample ID: TRIP BLANK_37 — Lab Sample ID: 240-167154-1

No Detections.

Client Sample ID: MW-03_051922 — Lab Sample ID: 240-167154-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.9	J H	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-45_051922 — Lab Sample ID: 240-167154-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9.5		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	33		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-70_051922 — Lab Sample ID: 240-167154-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J H	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	15		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	30		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-71_052022 — Lab Sample ID: 240-167154-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.81	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.53	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-122_052022 — Lab Sample ID: 240-167154-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Client Sample ID: TRIP BLANK_37

Date Collected: 05/19/22 00:00
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 14:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 14:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 14:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 14:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 14:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 14:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*06/02/22 14:22*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*06/02/22 14:22*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*06/02/22 14:22*	*1*
Dibromofluoromethane (Surr)	*117*		*73 - 120*		*06/02/22 14:22*	*1*

Client Sample ID: MW-03_051922

Date Collected: 05/19/22 14:36
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.9**	**J H**	2.0	0.86	ug/L			06/06/22 21:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*06/06/22 21:38*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 14:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 14:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 14:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 14:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 14:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 14:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*06/02/22 14:46*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*06/02/22 14:46*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*06/02/22 14:46*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*06/02/22 14:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Client Sample ID: MW-45_051922
Date Collected: 05/19/22 12:40
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			06/06/22 22:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*06/06/22 22:03*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 20:09	1
cis-1,2-Dichloroethene	**9.5**		1.0	0.46	ug/L			06/02/22 20:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 20:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 20:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 20:09	1
Vinyl chloride	**33**		1.0	0.45	ug/L			06/02/22 20:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*06/02/22 20:09*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*06/02/22 20:09*	*1*
Toluene-d8 (Surr)	*83*		*78 - 122*		*06/02/22 20:09*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*06/02/22 20:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Client Sample ID: MW-70_051922
Date Collected: 05/19/22 11:10
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.6**	**J H**	2.0	0.86	ug/L			06/06/22 22:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*06/06/22 22:28*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 20:34	1
cis-1,2-Dichloroethene	**15**		1.0	0.46	ug/L			06/02/22 20:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 20:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 20:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 20:34	1
Vinyl chloride	**30**		1.0	0.45	ug/L			06/02/22 20:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*06/02/22 20:34*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*06/02/22 20:34*	*1*
Toluene-d8 (Surr)	*82*		*78 - 122*		*06/02/22 20:34*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*06/02/22 20:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Client Sample ID: MW-71_052022

Date Collected: 05/20/22 12:28
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-5

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			06/06/22 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*06/06/22 22:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 20:59	1
cis-1,2-Dichloroethene	**0.81**	**J**	1.0	0.46	ug/L			06/02/22 20:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 20:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 20:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 20:59	1
Vinyl chloride	**0.53**	**J**	1.0	0.45	ug/L			06/02/22 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*06/02/22 20:59*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*06/02/22 20:59*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*06/02/22 20:59*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*06/02/22 20:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Client Sample ID: MW-122_052022

Date Collected: 05/20/22 11:05
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-6

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U H	2.0	0.86	ug/L			06/06/22 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*06/06/22 23:18*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 21:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 21:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 21:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 21:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 21:25	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			06/02/22 21:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*06/02/22 21:25*	*1*
4-Bromofluorobenzene (Surr)	*82*		*56 - 136*		*06/02/22 21:25*	*1*
Toluene-d8 (Surr)	*79*		*78 - 122*		*06/02/22 21:25*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*06/02/22 21:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-166988-A-25 MS	Matrix Spike	80	90	81	91
240-166988-A-25 MSD	Matrix Spike Duplicate	78	89	80	92
240-167012-E-7 MSD	Matrix Spike Duplicate	89	106	101	96
240-167012-H-7 MS	Matrix Spike	88	107	102	98
240-167154-1	TRIP BLANK_37	104	97	95	117
240-167154-2	MW-03_051922	105	97	93	115
240-167154-3	MW-45_051922	84	85	83	91
240-167154-4	MW-70_051922	83	83	82	89
240-167154-5	MW-71_052022	86	83	81	91
240-167154-6	MW-122_052022	85	82	79	89
LCS 240-528862/5	Lab Control Sample	88	105	99	94
LCS 240-528896/5	Lab Control Sample	77	91	81	90
MB 240-528862/8	Method Blank	104	99	97	114
MB 240-528896/8	Method Blank	83	85	81	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-167154-2	MW-03_051922	108
240-167154-3	MW-45_051922	108
240-167154-4	MW-70_051922	107
240-167154-5	MW-71_052022	103
240-167154-6	MW-122_052022	105
240-167581-C-2 MS	Matrix Spike	113
240-167581-C-2 MSD	Matrix Spike Duplicate	113
LCS 240-529389/3	Lab Control Sample	106
MB 240-529389/4	Method Blank	108

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-528862/8
Matrix: Water
Analysis Batch: 528862

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 11:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 11:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 11:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 11:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 11:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 11:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*06/02/22 11:28*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*06/02/22 11:28*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*06/02/22 11:28*	*1*
Dibromofluoromethane (Surr)	*114*		*73 - 120*		*06/02/22 11:28*	*1*

Lab Sample ID: LCS 240-528862/5
Matrix: Water
Analysis Batch: 528862

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	22.6		ug/L		113	63 - 134
cis-1,2-Dichloroethene	20.0	20.6		ug/L		103	77 - 123
Tetrachloroethene	20.0	21.9		ug/L		109	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		104	75 - 124
Trichloroethene	20.0	21.0		ug/L		105	70 - 122
Vinyl chloride	20.0	14.9		ug/L		75	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-167012-E-7 MSD
Matrix: Water
Analysis Batch: 528862

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.0	U	20.0	21.8		ug/L		109	66 - 128	1	14
trans-1,2-Dichloroethene	1.0	U	20.0	21.9		ug/L		110	56 - 136	2	15
Trichloroethene	1.0	U	20.0	21.0		ug/L		105	61 - 124	4	15
Vinyl chloride	1.4		20.0	16.8		ug/L		77	43 - 157	5	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-167012-H-7 MS
Matrix: Water
Analysis Batch: 528862

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	1.0	U	20.0	21.5		ug/L		107	66 - 128
trans-1,2-Dichloroethene	1.0	U	20.0	22.4		ug/L		112	56 - 136
Trichloroethene	1.0	U	20.0	21.9		ug/L		110	61 - 124
Vinyl chloride	1.4		20.0	15.9		ug/L		72	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: MB 240-528896/8
Matrix: Water
Analysis Batch: 528896

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			06/02/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			06/02/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			06/02/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			06/02/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			06/02/22 13:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*		*06/02/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*06/02/22 13:52*	*1*
Toluene-d8 (Surr)	*81*		*78 - 122*		*06/02/22 13:52*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*06/02/22 13:52*	*1*

Lab Sample ID: LCS 240-528896/5
Matrix: Water
Analysis Batch: 528896

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.7		ug/L		93	63 - 134
cis-1,2-Dichloroethene	20.0	19.9		ug/L		99	77 - 123
Tetrachloroethene	20.0	20.6		ug/L		103	76 - 123
trans-1,2-Dichloroethene	20.0	20.1		ug/L		100	75 - 124
Trichloroethene	20.0	21.3		ug/L		107	70 - 122
Vinyl chloride	20.0	17.7		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*81*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-166988-A-25 MS
Matrix: Water
Analysis Batch: 528896

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	320		250	504		ug/L		73	66 - 128
Tetrachloroethene	13	U	250	219		ug/L		87	62 - 131
trans-1,2-Dichloroethene	13	U	250	229		ug/L		92	56 - 136
Trichloroethene	13	U	250	233		ug/L		93	61 - 124
Vinyl chloride	340		250	467		ug/L		50	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*81*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-166988-A-25 MSD
Matrix: Water
Analysis Batch: 528896

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	320		250	555		ug/L		94	66 - 128	10	14
Tetrachloroethene	13	U	250	238		ug/L		95	62 - 131	9	20
trans-1,2-Dichloroethene	13	U	250	247		ug/L		99	56 - 136	8	15
Trichloroethene	13	U	250	257		ug/L		103	61 - 124	10	15
Vinyl chloride	340		250	499		ug/L		63	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*62 - 137*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*
Toluene-d8 (Surr)	*80*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-529389/4
Matrix: Water
Analysis Batch: 529389

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			06/06/22 19:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*06/06/22 19:33*	*1*

Lab Sample ID: LCS 240-529389/3
Matrix: Water
Analysis Batch: 529389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.9		ug/L		109	80 - 122

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-529389/3
Matrix: Water
Analysis Batch: 529389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-167581-C-2 MS
Matrix: Water
Analysis Batch: 529389

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.5		10.0	14.7		ug/L		122	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

Lab Sample ID: 240-167581-C-2 MSD
Matrix: Water
Analysis Batch: 529389

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.5		10.0	14.4		ug/L		118	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

GC/MS VOA

Analysis Batch: 528862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167154-1	TRIP BLANK_37	Total/NA	Water	8260D	
240-167154-2	MW-03_051922	Total/NA	Water	8260D	
MB 240-528862/8	Method Blank	Total/NA	Water	8260D	
LCS 240-528862/5	Lab Control Sample	Total/NA	Water	8260D	
240-167012-E-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-167012-H-7 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 528896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167154-3	MW-45_051922	Total/NA	Water	8260D	
240-167154-4	MW-70_051922	Total/NA	Water	8260D	
240-167154-5	MW-71_052022	Total/NA	Water	8260D	
240-167154-6	MW-122_052022	Total/NA	Water	8260D	
MB 240-528896/8	Method Blank	Total/NA	Water	8260D	
LCS 240-528896/5	Lab Control Sample	Total/NA	Water	8260D	
240-166988-A-25 MS	Matrix Spike	Total/NA	Water	8260D	
240-166988-A-25 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 529389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167154-2	MW-03_051922	Total/NA	Water	8260D SIM	
240-167154-3	MW-45_051922	Total/NA	Water	8260D SIM	
240-167154-4	MW-70_051922	Total/NA	Water	8260D SIM	
240-167154-5	MW-71_052022	Total/NA	Water	8260D SIM	
240-167154-6	MW-122_052022	Total/NA	Water	8260D SIM	
MB 240-529389/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-529389/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-167581-C-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-167581-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Client Sample ID: TRIP BLANK_37
Date Collected: 05/19/22 00:00
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528862	06/02/22 14:22	HMB	TAL CAN

Client Sample ID: MW-03_051922
Date Collected: 05/19/22 14:36
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528862	06/02/22 14:46	HMB	TAL CAN
Total/NA	Analysis	8260D SIM		1	529389	06/06/22 21:38	CS	TAL CAN

Client Sample ID: MW-45_051922
Date Collected: 05/19/22 12:40
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 20:09	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	529389	06/06/22 22:03	CS	TAL CAN

Client Sample ID: MW-70_051922
Date Collected: 05/19/22 11:10
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 20:34	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	529389	06/06/22 22:28	CS	TAL CAN

Client Sample ID: MW-71_052022
Date Collected: 05/20/22 12:28
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 20:59	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	529389	06/06/22 22:53	CS	TAL CAN

Client Sample ID: MW-122_052022
Date Collected: 05/20/22 11:05
Date Received: 05/24/22 10:00

Lab Sample ID: 240-167154-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	528896	06/02/22 21:25	TJL1	TAL CAN
Total/NA	Analysis	8260D SIM		1	529389	06/06/22 23:18	CS	TAL CAN

Laboratory References:
TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-167154-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-22
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-22-16	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sam Hindle	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_37	5/19/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-03-051922	5/19/22	14:36		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-45-051922	5/19/22	12:40		X						6					N	G	X	X	X	X	X	X	X	" "
MW-70_051922	5/19/22	11:10		X						6					N	G	X	X	X	X	X	X	X	" "
MW-71_052022	5/20/22	12:28		X						6					N	G	X	X	X	X	X	X	X	" "
MW-122_052022	5/20/22	11:05		X						6					N	G	X	X	X	X	X	X	X	" "

240-167154 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	5/20/22 15:40	Arcadis (COV) Cold Storage	Arcadis	5/20/22 15:40
[signature]	ARCADIS	5/23/22 0850	[signature]	EETA	5/23/22 0850
[signature]	EETA	5/23/22 054	Received in Laboratory by: [signature]	Company: EBINC	Date/Time: 5/24/22 10:00

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6/8/2022

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 167154
Canton Facility

Client ARCADIS Site Name

Cooler Received on 5/24/22 Opened on 5/24/22

Cooler unpacked by: M. A. A.

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y)N), # of containers (Y)N), and sample type of grab/comp (Y)N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC157842
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. (Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) MW-03/45 (1x HCL VOA EACH) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 167154

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.2	2.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

June 08, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 167154-1
Sample date: 2022-05-19 2022-05-20
Report received by CADENA: 2022-06-08
Initial Data Verification completed by CADENA: 2022-06-08
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

HTQ - GCMS VOC SIM ALL sample analyses were performed outside of reference holding time so all associated results should be considered to be estimated and qualified with J flags if detected and UJ flags if non-detect.

GCMS VOC QC batch MS/MSD issues outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

GCMS VOC QC batch CCV response outliers as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Qualified Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 167154-1

		Sample Name:	MW-03_051922				MW-45_051922				MW-70_051922				MW-71_052022				MW-122_052022			
		Lab Sample ID:	2401671542				2401671543				2401671544				2401671545				2401671546			
		Sample Date:	5/19/2022				5/19/2022				5/19/2022				5/20/2022				5/20/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
OSW-8260DSIM																						
1,4-Dioxane	123-91-1		1.9	2.0	ug/l	J	ND	2.0	ug/l	UJ	1.6	2.0	ug/l	J	ND	2.0	ug/l	UJ	ND	2.0	ug/l	UJ

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 167154-1

	Sample Name:	TRIP BLANK_37				MW-03_051922				MW-45_051922				MW-70_051922				MW-71_052022				MW-122_052022			
	Lab Sample ID:	2401671541				2401671542				2401671543				2401671544				2401671545				2401671546			
	Sample Date:	5/19/2022				5/19/2022				5/19/2022				5/19/2022				5/20/2022				5/20/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																									
OSW-8260D																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	9.5	1.0	ug/l	---	15	1.0	ug/l	---	0.81	1.0	ug/l	J	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	33	1.0	ug/l	---	30	1.0	ug/l	---	0.53	1.0	ug/l	J	1.5	1.0	ug/l	---
OSW-8260DSIM																									
1,4-Dioxane	123-91-1					1.9	2.0	ug/l	J	ND	2.0	ug/l	UJ	1.6	2.0	ug/l	J	ND	2.0	ug/l	UJ	ND	2.0	ug/l	UJ

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171289-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/22/2022 4:19:02 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Job ID: 240-171289-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171289-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171289-1	TRIP BLANK_67	Water	08/08/22 00:00	08/10/22 09:30
240-171289-2	MW-53_080822	Water	08/08/22 10:27	08/10/22 09:30
240-171289-3	MW-57_080822	Water	08/08/22 11:33	08/10/22 09:30
240-171289-4	MW-51_080822	Water	08/08/22 13:15	08/10/22 09:30
240-171289-5	MW-65_080822	Water	08/08/22 14:35	08/10/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Client Sample ID: TRIP BLANK_67 — Lab Sample ID: 240-171289-1

No Detections.

Client Sample ID: MW-53_080822 — Lab Sample ID: 240-171289-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.54	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-57_080822 — Lab Sample ID: 240-171289-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.7	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.85	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-51_080822 — Lab Sample ID: 240-171289-4

No Detections.

Client Sample ID: MW-65_080822 — Lab Sample ID: 240-171289-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.1		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	7.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Client Sample ID: TRIP BLANK_67

Date Collected: 08/08/22 00:00
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 21:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 21:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 21:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 21:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/11/22 21:00*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/11/22 21:00*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/11/22 21:00*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/11/22 21:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Client Sample ID: MW-53_080822
Date Collected: 08/08/22 10:27
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.1**	**J**	2.0	0.86	ug/L			08/15/22 00:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/15/22 00:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 21:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 21:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 21:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 21:25	1
Vinyl chloride	**0.54**	**J**	1.0	0.45	ug/L			08/11/22 21:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 21:25*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/11/22 21:25*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/11/22 21:25*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/11/22 21:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Client Sample ID: MW-57_080822

Lab Sample ID: 240-171289-3

Date Collected: 08/08/22 11:33

Matrix: Water

Date Received: 08/10/22 09:30

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7	J	2.0	0.86	ug/L			08/15/22 00:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/15/22 00:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:49	1
Vinyl chloride	0.85	J	1.0	0.45	ug/L			08/11/22 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 17:49*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/11/22 17:49*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/11/22 17:49*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 17:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Client Sample ID: MW-51_080822
Date Collected: 08/08/22 13:15
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 01:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/15/22 01:04*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 17:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/11/22 17:01*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/11/22 17:01*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/11/22 17:01*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 17:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Client Sample ID: MW-65_080822
Date Collected: 08/08/22 14:35
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 01:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/15/22 01:30*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 17:25	1
cis-1,2-Dichloroethene	**5.1**		1.0	0.46	ug/L			08/11/22 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 17:25	1
Vinyl chloride	**7.1**		1.0	0.45	ug/L			08/11/22 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 17:25*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/11/22 17:25*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/11/22 17:25*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/11/22 17:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171141-B-17 MS	Matrix Spike	93	90	102	103
240-171141-B-17 MSD	Matrix Spike Duplicate	97	91	101	106
240-171285-B-2 MS	Matrix Spike	90	95	101	96
240-171285-D-2 MSD	Matrix Spike Duplicate	92	98	100	97
240-171289-1	TRIP BLANK_67	94	87	99	101
240-171289-2	MW-53_080822	95	88	101	104
240-171289-3	MW-57_080822	95	93	102	100
240-171289-4	MW-51_080822	97	94	101	100
240-171289-5	MW-65_080822	95	91	99	99
LCS 240-538489/8	Lab Control Sample	90	86	96	99
LCS 240-538491/5	Lab Control Sample	89	92	100	95
MB 240-538489/9	Method Blank	90	83	94	96
MB 240-538491/8	Method Blank	95	90	98	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
240-171289-2	MW-53_080822	89
240-171289-3	MW-57_080822	91
240-171289-4	MW-51_080822	85
240-171289-5	MW-65_080822	86
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538489/9
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/11/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/11/22 13:39*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/11/22 13:39*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/11/22 13:39*	*1*

Lab Sample ID: LCS 240-538489/8
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.4		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	77 - 123
Tetrachloroethene	20.0	17.6		ug/L		88	76 - 123
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	75 - 124
Trichloroethene	20.0	18.0		ug/L		90	70 - 122
Vinyl chloride	20.0	16.4		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	250	226		ug/L		90	56 - 135
cis-1,2-Dichloroethene	13		250	249		ug/L		94	66 - 128
Tetrachloroethene	690	F1	250	867	E	ug/L		70	62 - 131
trans-1,2-Dichloroethene	13	U	250	214		ug/L		85	56 - 136
Trichloroethene	14		250	245		ug/L		92	61 - 124
Vinyl chloride	13	U	250	212		ug/L		85	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171141-B-17 MS
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	103		73 - 120

Lab Sample ID: 240-171141-B-17 MSD
Matrix: Water
Analysis Batch: 538489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	229		ug/L		92	56 - 135	1	26
cis-1,2-Dichloroethene	13		250	265		ug/L		101	66 - 128	6	14
Tetrachloroethene	690	F1	250	844	E F1	ug/L		61	62 - 131	3	20
trans-1,2-Dichloroethene	13	U	250	223		ug/L		89	56 - 136	4	15
Trichloroethene	14		250	255		ug/L		96	61 - 124	4	15
Vinyl chloride	13	U	250	216		ug/L		86	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		62 - 137
4-Bromofluorobenzene (Surr)	91		56 - 136
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	106		73 - 120

Lab Sample ID: MB 240-538491/8
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		62 - 137		08/11/22 13:03	1
4-Bromofluorobenzene (Surr)	90		56 - 136		08/11/22 13:03	1
Toluene-d8 (Surr)	98		78 - 122		08/11/22 13:03	1
Dibromofluoromethane (Surr)	100		73 - 120		08/11/22 13:03	1

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.2		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	28.4		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	22.8		ug/L		91	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	22.0		ug/L		88	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	66 - 128		
Tetrachloroethene	1.0	U	25.0	27.8		ug/L		111	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 136		
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124		
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171285-D-2 MSD
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136	1	15
Trichloroethene	1.0	U	25.0	23.5		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.7		ug/L		79	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.43		ug/L		94	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

GC/MS VOA

Analysis Batch: 538489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171289-1	TRIP BLANK_67	Total/NA	Water	8260D	
240-171289-2	MW-53_080822	Total/NA	Water	8260D	
MB 240-538489/9	Method Blank	Total/NA	Water	8260D	
LCS 240-538489/8	Lab Control Sample	Total/NA	Water	8260D	
240-171141-B-17 MS	Matrix Spike	Total/NA	Water	8260D	
240-171141-B-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171289-3	MW-57_080822	Total/NA	Water	8260D	
240-171289-4	MW-51_080822	Total/NA	Water	8260D	
240-171289-5	MW-65_080822	Total/NA	Water	8260D	
MB 240-538491/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538491/5	Lab Control Sample	Total/NA	Water	8260D	
240-171285-B-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171285-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171289-2	MW-53_080822	Total/NA	Water	8260D SIM	
240-171289-3	MW-57_080822	Total/NA	Water	8260D SIM	
240-171289-4	MW-51_080822	Total/NA	Water	8260D SIM	
240-171289-5	MW-65_080822	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Client Sample ID: TRIP BLANK_67
Date Collected: 08/08/22 00:00
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 21:00

Client Sample ID: MW-53_080822
Date Collected: 08/08/22 10:27
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538489	HMB	EET CAN	08/11/22 21:25
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 00:14

Client Sample ID: MW-57_080822
Date Collected: 08/08/22 11:33
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 17:49
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 00:39

Client Sample ID: MW-51_080822
Date Collected: 08/08/22 13:15
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 17:01
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 01:04

Client Sample ID: MW-65_080822
Date Collected: 08/08/22 14:35
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171289-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 17:25
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 01:30

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171289-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM					Sample Specific Notes / Special Instructions:
TRIP BLANK_67	8/8/22	—		X						1					N	G	X	X	X	X	X	X						1 Trip Blank
MW-53_080822	8/8/22	1027		X						6					N	G	X	X	X	X	X	X	X					3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-57_080822	8/8/22	1133		X						6					N	G	X	X	X	X	X	X	X					
MW-51_080822	8/8/22	1315		X						6					N	G	X	X	X	X	X	X	X					
MW-65_080822	8/8/22	1435		X						6					N	G	X	X	X	X	X	X	X					

240-171289 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples [illegible] than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis 1545	8/8/22	Novi Cold Storage	Arcadis	8/8/22 1545
Stephanie Turner	Arcadis	8/9/22 1410	Lei Hall	EEA	8/9/22 1411
Lei Hall	EEA	8/9/22 1446	Received in Laboratory by: Mandaly Blea	EEA	8/10/22 9:30

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8/22/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 174987
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # T4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [N] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171285

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
TA Client Box Other	IR-13 IR-15	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.7	2.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171289-1
Sample date: 2022-08-08
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers:
GCMS VOC QC batch 538489.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171289-1

		Sample Name:	TRIP BLANK_67				MW-53_080822				MW-57_080822				MW-51_080822				MW-65_080822			
		Lab Sample ID:	2401712891				2401712892				2401712893				2401712894				2401712895			
		Sample Date:	8/8/2022				8/8/2022				8/8/2022				8/8/2022				8/8/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	5.1	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.54	1.0	ug/l	J	0.85	1.0	ug/l	J	ND	1.0	ug/l	---	7.1	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					1.1	2.0	ug/l	J	1.7	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171295-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/22/2022 4:36:30 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Job ID: 240-171295-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171295-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 12:45 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171295-1	TRIP BLANK_61	Water	08/06/22 00:00	08/10/22 12:45
240-171295-2	MW-40_080622	Water	08/06/22 09:45	08/10/22 12:45
240-171295-3	MW-31_080622	Water	08/06/22 11:08	08/10/22 12:45
240-171295-4	MW-208S_080622	Water	08/06/22 12:00	08/10/22 12:45
240-171295-5	MW-30_080622	Water	08/06/22 13:05	08/10/22 12:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Client Sample ID: TRIP BLANK_61 — Lab Sample ID: 240-171295-1

No Detections.

Client Sample ID: MW-40_080622 — Lab Sample ID: 240-171295-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.6		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.80	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-31_080622 — Lab Sample ID: 240-171295-3

No Detections.

Client Sample ID: MW-208S_080622 — Lab Sample ID: 240-171295-4

No Detections.

Client Sample ID: MW-30_080622 — Lab Sample ID: 240-171295-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	15		2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Client Sample ID: TRIP BLANK_61

Date Collected: 08/06/22 00:00
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 14:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 14:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 14:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 14:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 14:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/11/22 14:39*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/11/22 14:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/11/22 14:39*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/11/22 14:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Client Sample ID: MW-40_080622
Date Collected: 08/06/22 09:45
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 03:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 03:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:24	1
cis-1,2-Dichloroethene	**2.6**		1.0	0.46	ug/L			08/11/22 19:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:24	1
Vinyl chloride	**0.80**	**J**	1.0	0.45	ug/L			08/11/22 19:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 19:24*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/11/22 19:24*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/11/22 19:24*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/11/22 19:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Client Sample ID: MW-31_080622

Date Collected: 08/06/22 11:08
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 03:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/15/22 03:36*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 19:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 19:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 19:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 19:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 19:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/11/22 19:00*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/11/22 19:00*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/11/22 19:00*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/11/22 19:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Client Sample ID: MW-208S_080622
Date Collected: 08/06/22 12:00
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 04:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/15/22 04:02*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 18:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 18:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 18:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 18:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/11/22 18:36*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/11/22 18:36*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/11/22 18:36*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 18:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Client Sample ID: MW-30_080622

Date Collected: 08/06/22 13:05
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-5

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	15		2.0	0.86	ug/L			08/15/22 04:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/15/22 04:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/12/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/12/22 13:52*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/12/22 13:52*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/12/22 13:52*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171272-E-5 MS	Matrix Spike	89	94	99	95
240-171272-H-5 MSD	Matrix Spike Duplicate	92	96	100	97
240-171285-B-2 MS	Matrix Spike	90	95	101	96
240-171285-D-2 MSD	Matrix Spike Duplicate	92	98	100	97
240-171295-1	TRIP BLANK_61	91	90	99	98
240-171295-2	MW-40_080622	95	90	95	99
240-171295-3	MW-31_080622	94	91	99	99
240-171295-4	MW-208S_080622	98	92	96	100
240-171295-5	MW-30_080622	90	87	93	94
LCS 240-538491/5	Lab Control Sample	89	92	100	95
LCS 240-538666/5	Lab Control Sample	84	91	99	92
MB 240-538491/8	Method Blank	95	90	98	100
MB 240-538666/8	Method Blank	89	89	97	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
240-171295-2	MW-40_080622	88
240-171295-3	MW-31_080622	87
240-171295-4	MW-208S_080622	87
240-171295-5	MW-30_080622	89
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538491/8
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/11/22 13:03*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/11/22 13:03*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/11/22 13:03*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/11/22 13:03*	*1*

Lab Sample ID: LCS 240-538491/5
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.2		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	28.4		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	22.8		ug/L		91	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	22.0		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	66 - 128
Tetrachloroethene	1.0	U	25.0	27.8		ug/L		111	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	23.3		ug/L		93	61 - 124
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171285-B-2 MS
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-171285-D-2 MSD
Matrix: Water
Analysis Batch: 538491

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 135	2	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.9		ug/L		88	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	26.8		ug/L		107	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136	1	15
Trichloroethene	1.0	U	25.0	23.5		ug/L		94	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.7		ug/L		79	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	100		78 - 122
Dibromofluoromethane (Surr)	97		73 - 120

Lab Sample ID: MB 240-538666/8
Matrix: Water
Analysis Batch: 538666

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 12:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 12:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 12:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 12:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 12:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 12:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		62 - 137		08/12/22 12:17	1
4-Bromofluorobenzene (Surr)	89		56 - 136		08/12/22 12:17	1
Toluene-d8 (Surr)	97		78 - 122		08/12/22 12:17	1
Dibromofluoromethane (Surr)	94		73 - 120		08/12/22 12:17	1

Lab Sample ID: LCS 240-538666/5
Matrix: Water
Analysis Batch: 538666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.8		ug/L		95	63 - 134
cis-1,2-Dichloroethene	25.0	22.7		ug/L		91	77 - 123
Tetrachloroethene	25.0	28.6		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		92	75 - 124
Trichloroethene	25.0	25.8		ug/L		103	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-538666/5
Matrix: Water
Analysis Batch: 538666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	20.8		ug/L		83	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-171272-E-5 MS
Matrix: Water
Analysis Batch: 538666

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	19.4		ug/L		78	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	19.8		ug/L		79	66 - 128		
Tetrachloroethene	1.0	U	25.0	25.2		ug/L		101	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	19.7		ug/L		79	56 - 136		
Trichloroethene	1.0	U	25.0	21.6		ug/L		87	61 - 124		
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171272-H-5 MSD
Matrix: Water
Analysis Batch: 538666

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 135	9	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	25.2		ug/L		101	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 136	6	15
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	4	15
Vinyl chloride	1.0	U	25.0	19.1		ug/L		77	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.43		ug/L		94	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

GC/MS VOA

Analysis Batch: 538491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171295-1	TRIP BLANK_61	Total/NA	Water	8260D	
240-171295-2	MW-40_080622	Total/NA	Water	8260D	
240-171295-3	MW-31_080622	Total/NA	Water	8260D	
240-171295-4	MW-208S_080622	Total/NA	Water	8260D	
MB 240-538491/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538491/5	Lab Control Sample	Total/NA	Water	8260D	
240-171285-B-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171285-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171295-5	MW-30_080622	Total/NA	Water	8260D	
MB 240-538666/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538666/5	Lab Control Sample	Total/NA	Water	8260D	
240-171272-E-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-171272-H-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171295-2	MW-40_080622	Total/NA	Water	8260D SIM	
240-171295-3	MW-31_080622	Total/NA	Water	8260D SIM	
240-171295-4	MW-208S_080622	Total/NA	Water	8260D SIM	
240-171295-5	MW-30_080622	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Client Sample ID: TRIP BLANK_61
Date Collected: 08/06/22 00:00
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 14:39

Client Sample ID: MW-40_080622
Date Collected: 08/06/22 09:45
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 19:24
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 03:11

Client Sample ID: MW-31_080622
Date Collected: 08/06/22 11:08
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 19:00
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 03:36

Client Sample ID: MW-208S_080622
Date Collected: 08/06/22 12:00
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538491	SAM	EET CAN	08/11/22 18:36
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 04:02

Client Sample ID: MW-30_080622
Date Collected: 08/06/22 13:05
Date Received: 08/10/22 12:45

Lab Sample ID: 240-171295-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538666	SAM	EET CAN	08/12/22 13:52
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 04:27

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171295-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 61	8/6/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-40_080622	8/6/22	0945		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-31_080622	8/6/22	1108		X						6					N	G	X	X	X	X	X	X	X	
MW-208S_080622	8/6/22	1200		X						6					N	G	X	X	X	X	X	X	X	
MW-30_080622	8/6/22	1305		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained long
☐ Return to Client ☑ Disposal By Lab ☐ Archive Fo

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

240-171295 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/6/22 1320	Novi Cold Storage	Arcadis	8/6/22 1320
	Arcadis	8/9/22 1410		EETA	8/9/22 1411
	EETA	8/9/22 1440	Received in Laboratory by: Mandaly Blair	eesmc	8-10-22 9:30

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8/22/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171295**
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # T4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171295

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.7	2.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171295-1
Sample date: 2022-08-06
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171295-1

		Sample Name:	TRIP BLANK_61				MW-40_080622				MW-31_080622				MW-208S_080622				MW-30_080622			
		Lab Sample ID:	2401712951				2401712952				2401712953				2401712954				2401712955			
		Sample Date:	8/6/2022				8/6/2022				8/6/2022				8/6/2022				8/6/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
OSW-8260D																						
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	2.6	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	0.80	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																						
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	15	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171296-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/22/2022 4:39:07 PM
Opal Johnson, Project Manager II
(330)966-9279
Opal.Johnson@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Job ID: 240-171296-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171296-1

Comments
No additional comments.

Receipt
The samples were received on 8/10/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0º C and 2.7º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171296-1	TRIP BLANK_62	Water	08/06/22 00:00	08/10/22 09:30
240-171296-2	MW-209S_080622	Water	08/06/22 09:58	08/10/22 09:30
240-171296-3	MW-41_080622	Water	08/06/22 10:45	08/10/22 09:30
240-171296-4	MW-210S_080622	Water	08/06/22 11:35	08/10/22 09:30
240-171296-5	MW-34_080622	Water	08/06/22 12:25	08/10/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Client Sample ID: TRIP BLANK_62 — Lab Sample ID: 240-171296-1

No Detections.

Client Sample ID: MW-209S_080622 — Lab Sample ID: 240-171296-2

No Detections.

Client Sample ID: MW-41_080622 — Lab Sample ID: 240-171296-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.5		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	1.5		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	1.7		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-210S_080622 — Lab Sample ID: 240-171296-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	17		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	2.1		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	6.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-34_080622 — Lab Sample ID: 240-171296-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.3		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.5		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Client Sample ID: TRIP BLANK_62

Date Collected: 08/06/22 00:00
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*08/11/22 15:03*	*1*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*08/11/22 15:03*	*1*
Toluene-d8 (Surr)	*112*		*78 - 122*		*08/11/22 15:03*	*1*
Dibromofluoromethane (Surr)	*112*		*73 - 120*		*08/11/22 15:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Client Sample ID: MW-209S_080622
Date Collected: 08/06/22 09:58
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 04:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/15/22 04:52*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*08/11/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 15:27*	*1*
Toluene-d8 (Surr)	*111*		*78 - 122*		*08/11/22 15:27*	*1*
Dibromofluoromethane (Surr)	*115*		*73 - 120*		*08/11/22 15:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Client Sample ID: MW-41_080622
Date Collected: 08/06/22 10:45
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**3.5**		2.0	0.86	ug/L			08/15/22 05:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/15/22 05:18*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 15:51	1
cis-1,2-Dichloroethene	**1.5**		1.0	0.46	ug/L			08/11/22 15:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 15:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 15:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 15:51	1
Vinyl chloride	**1.7**		1.0	0.45	ug/L			08/11/22 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*62 - 137*		*08/11/22 15:51*	*1*
4-Bromofluorobenzene (Surr)	*108*		*56 - 136*		*08/11/22 15:51*	*1*
Toluene-d8 (Surr)	*113*		*78 - 122*		*08/11/22 15:51*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 15:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Client Sample ID: MW-210S_080622
Date Collected: 08/06/22 11:35
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 05:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/15/22 05:43*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 16:15	1
cis-1,2-Dichloroethene	**17**		1.0	0.46	ug/L			08/11/22 16:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 16:15	1
trans-1,2-Dichloroethene	**2.1**		1.0	0.51	ug/L			08/11/22 16:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 16:15	1
Vinyl chloride	**6.5**		1.0	0.45	ug/L			08/11/22 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 16:15*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*08/11/22 16:15*	*1*
Toluene-d8 (Surr)	*109*		*78 - 122*		*08/11/22 16:15*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 16:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Client Sample ID: MW-34_080622
Date Collected: 08/06/22 12:25
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**5.3**		2.0	0.86	ug/L			08/15/22 06:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/15/22 06:08*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 16:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 16:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 16:39	1
Vinyl chloride	**1.5**		1.0	0.45	ug/L			08/11/22 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*62 - 137*		*08/11/22 16:39*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/11/22 16:39*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 16:39*	*1*
Dibromofluoromethane (Surr)	*117*		*73 - 120*		*08/11/22 16:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171296-1	TRIP BLANK_62	107	106	112	112
240-171296-2	MW-209S_080622	112	105	111	115
240-171296-3	MW-41_080622	113	108	113	116
240-171296-4	MW-210S_080622	110	101	109	116
240-171296-5	MW-34_080622	114	103	110	117
240-171299-B-3 MSD	Matrix Spike Duplicate	96	116	115	99
240-171299-E-3 MS	Matrix Spike	99	117	118	103
LCS 240-538478/5	Lab Control Sample	95	119	117	101
MB 240-538478/8	Method Blank	110	105	110	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171285-H-2 MSD	Matrix Spike Duplicate	89
240-171285-I-2 MS	Matrix Spike	89
240-171296-2	MW-209S_080622	90
240-171296-3	MW-41_080622	90
240-171296-4	MW-210S_080622	91
240-171296-5	MW-34_080622	91
LCS 240-538770/3	Lab Control Sample	85
MB 240-538770/4	Method Blank	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538478/8
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/11/22 13:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/11/22 13:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/11/22 13:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/11/22 13:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/11/22 13:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*62 - 137*		*08/11/22 13:02*	*1*
4-Bromofluorobenzene (Surr)	*105*		*56 - 136*		*08/11/22 13:02*	*1*
Toluene-d8 (Surr)	*110*		*78 - 122*		*08/11/22 13:02*	*1*
Dibromofluoromethane (Surr)	*116*		*73 - 120*		*08/11/22 13:02*	*1*

Lab Sample ID: LCS 240-538478/5
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.8		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.4		ug/L		102	77 - 123
Tetrachloroethene	20.0	21.8		ug/L		109	76 - 123
trans-1,2-Dichloroethene	20.0	20.5		ug/L		103	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	18.5		ug/L		93	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*119*		*56 - 136*
Toluene-d8 (Surr)	*117*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.4		ug/L		97	56 - 135	6	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	66 - 128	2	14
Tetrachloroethene	1.0	U	20.0	19.6		ug/L		98	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		91	56 - 136	3	15
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124	0	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		89	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*116*		*56 - 136*
Toluene-d8 (Surr)	*115*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171299-B-3 MSD
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171299-E-3 MS
Matrix: Water
Analysis Batch: 538478

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	66 - 128
Tetrachloroethene	1.0	U	20.0	19.2		ug/L		96	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		94	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	17.1		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*
4-Bromofluorobenzene (Surr)	*117*		*56 - 136*
Toluene-d8 (Surr)	*118*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538770/4
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/14/22 20:26*	*1*

Lab Sample ID: LCS 240-538770/3
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.43		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171285-H-2 MSD
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153	5	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171285-I-2 MS
Matrix: Water
Analysis Batch: 538770

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

GC/MS VOA

Analysis Batch: 538478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171296-1	TRIP BLANK_62	Total/NA	Water	8260D	
240-171296-2	MW-209S_080622	Total/NA	Water	8260D	
240-171296-3	MW-41_080622	Total/NA	Water	8260D	
240-171296-4	MW-210S_080622	Total/NA	Water	8260D	
240-171296-5	MW-34_080622	Total/NA	Water	8260D	
MB 240-538478/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538478/5	Lab Control Sample	Total/NA	Water	8260D	
240-171299-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	
240-171299-E-3 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 538770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171296-2	MW-209S_080622	Total/NA	Water	8260D SIM	
240-171296-3	MW-41_080622	Total/NA	Water	8260D SIM	
240-171296-4	MW-210S_080622	Total/NA	Water	8260D SIM	
240-171296-5	MW-34_080622	Total/NA	Water	8260D SIM	
MB 240-538770/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538770/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171285-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	
240-171285-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Client Sample ID: TRIP BLANK_62
Date Collected: 08/06/22 00:00
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 15:03

Client Sample ID: MW-209S_080622
Date Collected: 08/06/22 09:58
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 15:27
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 04:52

Client Sample ID: MW-41_080622
Date Collected: 08/06/22 10:45
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 15:51
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 05:18

Client Sample ID: MW-210S_080622
Date Collected: 08/06/22 11:35
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 16:15
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 05:43

Client Sample ID: MW-34_080622
Date Collected: 08/06/22 12:25
Date Received: 08/10/22 09:30

Lab Sample ID: 240-171296-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538478	LEE	EET CAN	08/11/22 16:39
Total/NA	Analysis	8260D SIM		1	538770	CS	EET CAN	08/15/22 06:08

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171296-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: CHRISTINA WEAVER	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_62	8/6/22	—		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-209S_080622	8/6/22	0958		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-41_080622	8/6/22	1045		6						6					N	G	X	X	X	X	X	X	X	
MW-210S_080622	8/6/22	1135		6						6					N	G	X	X	X	X	X	X	X	
MW-34_080622	8/6/22	1225		6						6					N	G	X	X	X	X	X	X	X	

240-171296 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Chanda Hill	ARCADIS	8/6/22 / 1500	NOVI COLD STORAGE	ARCADIS	8/6/22 / 1500
[signature]	Arcadis	8/9/22 1410	[signature]	EEA	8/9/22 1411
[signature]	EEA	8/9/22 1440	Received in Laboratory by: [signature]	CETK	8-10-22 9:30

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8/22/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171296**
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Justin H

Cooler Received on 8-10-22 Opened on 8-10-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # IT4 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171296

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 22, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171296-1
Sample date: 2022-08-06
Report received by CADENA: 2022-08-22
Initial Data Verification completed by CADENA: 2022-08-22
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171296-1

	Sample Name:	TRIP BLANK_62				MW-209S_080622				MW-41_080622				MW-210S_080622				MW-34_080622			
	Lab Sample ID:	2401712961				2401712962				2401712963				2401712964				2401712965			
	Sample Date:	8/6/2022				8/6/2022				8/6/2022				8/6/2022				8/6/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.5	1.0	ug/l	---	17	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.1	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.7	1.0	ug/l	---	6.5	1.0	ug/l	---	1.5	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	3.5	2.0	ug/l	---	ND	2.0	ug/l	---	5.3	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171408-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/17/2022 3:37:07 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171408-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171408-1

Comments
No additional comments.

Receipt
The samples were received on 8/11/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice.The temperatures of the 2 coolers at receipt time were 2.4º C and 3.7º C.

GC/MS VOA
Method 8260D SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-54_080922 (240-171408-3). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171408-1	TRIP BLANK_72	Water	08/09/22 00:00	08/11/22 09:30
240-171408-2	MW-54S_080922	Water	08/09/22 09:13	08/11/22 09:30
240-171408-3	MW-54_080922	Water	08/09/22 10:38	08/11/22 09:30
240-171408-4	PW-16-02_080922	Water	08/09/22 12:23	08/11/22 09:30
240-171408-5	MW-66_080922	Water	08/09/22 14:40	08/11/22 09:30
240-171408-6	MW-22_080922	Water	08/09/22 15:48	08/11/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: TRIP BLANK_72 — Lab Sample ID: 240-171408-1

No Detections.

Client Sample ID: MW-54S_080922 — Lab Sample ID: 240-171408-2

No Detections.

Client Sample ID: MW-54_080922 — Lab Sample ID: 240-171408-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.83	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: PW-16-02_080922 — Lab Sample ID: 240-171408-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.1		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	11		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-66_080922 — Lab Sample ID: 240-171408-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.49	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-22_080922 — Lab Sample ID: 240-171408-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	55		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1400		40	18	ug/L	40		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: TRIP BLANK_72

Date Collected: 08/09/22 00:00
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171408-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 16:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 16:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 16:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 16:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 16:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/12/22 16:34*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/12/22 16:34*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/12/22 16:34*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/12/22 16:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: MW-54S_080922

Date Collected: 08/09/22 09:13
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171408-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 23:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/15/22 23:54*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 22:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 22:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 22:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 22:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 22:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/12/22 22:01*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/12/22 22:01*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/12/22 22:01*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*08/12/22 22:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: MW-54_080922
Date Collected: 08/09/22 10:38
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171408-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			08/16/22 00:20	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/16/22 00:20*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 22:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 22:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 22:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 22:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 22:25	1
Vinyl chloride	**0.83**	**J**	1.0	0.45	ug/L			08/12/22 22:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/12/22 22:25*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/12/22 22:25*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/12/22 22:25*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 22:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: PW-16-02_080922
Date Collected: 08/09/22 12:23
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171408-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 00:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/16/22 00:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 22:50	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.46	ug/L			08/12/22 22:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 22:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 22:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 22:50	1
Vinyl chloride	**11**		1.0	0.45	ug/L			08/12/22 22:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/12/22 22:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/12/22 22:50*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/12/22 22:50*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*08/12/22 22:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: MW-66_080922
Date Collected: 08/09/22 14:40
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171408-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/16/22 01:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/16/22 01:10*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 13:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 13:52	1
Vinyl chloride	**0.49**	**J**	1.0	0.45	ug/L			08/15/22 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/15/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/15/22 13:52*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/15/22 13:52*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/15/22 13:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: MW-22_080922
Date Collected: 08/09/22 15:48
Date Received: 08/11/22 09:30

Lab Sample ID: 240-171408-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**55**		2.0	0.86	ug/L			08/16/22 01:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*		*08/16/22 01:36*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	40	U	40	20	ug/L			08/15/22 17:02	40
cis-1,2-Dichloroethene	40	U	40	18	ug/L			08/15/22 17:02	40
Tetrachloroethene	40	U	40	18	ug/L			08/15/22 17:02	40
trans-1,2-Dichloroethene	40	U	40	20	ug/L			08/15/22 17:02	40
Trichloroethene	40	U	40	18	ug/L			08/15/22 17:02	40
Vinyl chloride	**1400**		40	18	ug/L			08/15/22 17:02	40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/15/22 17:02*	*40*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/15/22 17:02*	*40*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/15/22 17:02*	*40*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/15/22 17:02*	*40*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171402-D-3 MS	Matrix Spike	88	95	95	83
240-171402-G-3 MSD	Matrix Spike Duplicate	89	98	97	81
240-171408-1	TRIP BLANK_72	96	92	94	82
240-171408-2	MW-54S_080922	92	90	94	82
240-171408-3	MW-54_080922	89	91	94	81
240-171408-4	PW-16-02_080922	88	90	94	80
240-171408-5	MW-66_080922	90	86	94	95
240-171408-6	MW-22_080922	91	88	97	99
240-171412-A-2 MS	Matrix Spike	86	92	97	95
240-171412-F-2 MSD	Matrix Spike Duplicate	87	94	98	95
LCS 240-538724/4	Lab Control Sample	90	97	96	85
LCS 240-538850/5	Lab Control Sample	81	91	99	91
MB 240-538724/6	Method Blank	95	94	97	81
MB 240-538850/8	Method Blank	87	89	96	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171402-H-3 MS	Matrix Spike	89
240-171402-M-3 MSD	Matrix Spike Duplicate	89
240-171408-2	MW-54S_080922	88
240-171408-3	MW-54_080922	90
240-171408-4	PW-16-02_080922	87
240-171408-5	MW-66_080922	85
240-171408-6	MW-22_080922	85
LCS 240-538971/3	Lab Control Sample	85
MB 240-538971/4	Method Blank	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-538724/6
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/12/22 14:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/12/22 14:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/12/22 14:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/12/22 14:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/12/22 14:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/12/22 14:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/12/22 14:29*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/12/22 14:29*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*08/12/22 14:29*	*1*

Lab Sample ID: LCS 240-538724/4
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	24.5		ug/L		98	77 - 123
Tetrachloroethene	25.0	22.6		ug/L		91	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	22.7		ug/L		91	70 - 122
Vinyl chloride	12.5	12.2		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	18.4		ug/L		74	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		82	56 - 136
Trichloroethene	1.0	U	25.0	19.5		ug/L		78	61 - 124
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171402-D-3 MS
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	83		73 - 120

Lab Sample ID: 240-171402-G-3 MSD
Matrix: Water
Analysis Batch: 538724

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	66 - 128	9	14
Tetrachloroethene	1.0	U	25.0	19.6		ug/L		78	62 - 131	6	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 136	8	15
Trichloroethene	1.0	U	25.0	20.8		ug/L		83	61 - 124	7	15
Vinyl chloride	1.0	U	12.5	10.5		ug/L		84	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	81		73 - 120

Lab Sample ID: MB 240-538850/8
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/15/22 12:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/15/22 12:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/15/22 12:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/15/22 12:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/15/22 12:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		62 - 137		08/15/22 12:17	1
4-Bromofluorobenzene (Surr)	89		56 - 136		08/15/22 12:17	1
Toluene-d8 (Surr)	96		78 - 122		08/15/22 12:17	1
Dibromofluoromethane (Surr)	95		73 - 120		08/15/22 12:17	1

Lab Sample ID: LCS 240-538850/5
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.6		ug/L		95	63 - 134
cis-1,2-Dichloroethene	25.0	22.7		ug/L		91	77 - 123
Tetrachloroethene	25.0	29.5		ug/L		118	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	25.6		ug/L		102	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-538850/5
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	20.7		ug/L		83	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-171412-A-2 MS
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	23.4		ug/L		94	66 - 128		
Tetrachloroethene	1.0	U	25.0	29.3		ug/L		117	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136		
Trichloroethene	1.0	U	25.0	25.9		ug/L		104	61 - 124		
Vinyl chloride	1.0	U	25.0	20.4		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-171412-F-2 MSD
Matrix: Water
Analysis Batch: 538850

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	24.3		ug/L		97	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		95	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	30.9		ug/L		124	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	56 - 136	0	15
Trichloroethene	1.0	U	25.0	26.3		ug/L		105	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	20.2		ug/L		81	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-538971/4
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/15/22 20:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/15/22 20:58*	*1*

Lab Sample ID: LCS 240-538971/3
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.74		ug/L		97	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 120*

Lab Sample ID: 240-171402-H-3 MS
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

Lab Sample ID: 240-171402-M-3 MSD
Matrix: Water
Analysis Batch: 538971

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153	3	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

GC/MS VOA

Analysis Batch: 538724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171408-1	TRIP BLANK_72	Total/NA	Water	8260D	
240-171408-2	MW-54S_080922	Total/NA	Water	8260D	
240-171408-3	MW-54_080922	Total/NA	Water	8260D	
240-171408-4	PW-16-02_080922	Total/NA	Water	8260D	
MB 240-538724/6	Method Blank	Total/NA	Water	8260D	
LCS 240-538724/4	Lab Control Sample	Total/NA	Water	8260D	
240-171402-D-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171402-G-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171408-5	MW-66_080922	Total/NA	Water	8260D	
240-171408-6	MW-22_080922	Total/NA	Water	8260D	
MB 240-538850/8	Method Blank	Total/NA	Water	8260D	
LCS 240-538850/5	Lab Control Sample	Total/NA	Water	8260D	
240-171412-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171412-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 538971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171408-2	MW-54S_080922	Total/NA	Water	8260D SIM	
240-171408-3	MW-54_080922	Total/NA	Water	8260D SIM	
240-171408-4	PW-16-02_080922	Total/NA	Water	8260D SIM	
240-171408-5	MW-66_080922	Total/NA	Water	8260D SIM	
240-171408-6	MW-22_080922	Total/NA	Water	8260D SIM	
MB 240-538971/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-538971/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171402-H-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171402-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Client Sample ID: TRIP BLANK_72
Lab Sample ID: 240-171408-1
Date Collected: 08/09/22 00:00
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 16:34

Client Sample ID: MW-54S_080922
Lab Sample ID: 240-171408-2
Date Collected: 08/09/22 09:13
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 22:01
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/15/22 23:54

Client Sample ID: MW-54_080922
Lab Sample ID: 240-171408-3
Date Collected: 08/09/22 10:38
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 22:25
Total/NA	Analysis	8260D SIM		2	538971	CS	EET CAN	08/16/22 00:20

Client Sample ID: PW-16-02_080922
Lab Sample ID: 240-171408-4
Date Collected: 08/09/22 12:23
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538724	SAM	EET CAN	08/12/22 22:50
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 00:45

Client Sample ID: MW-66_080922
Lab Sample ID: 240-171408-5
Date Collected: 08/09/22 14:40
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	538850	SAM	EET CAN	08/15/22 13:52
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 01:10

Client Sample ID: MW-22_080922
Lab Sample ID: 240-171408-6
Date Collected: 08/09/22 15:48
Matrix: Water
Date Received: 08/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		40	538850	SAM	EET CAN	08/15/22 17:02
Total/NA	Analysis	8260D SIM		1	538971	CS	EET CAN	08/16/22 01:36

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171408-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling:
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_72	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-54S_080922	8/9/22	0913		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-54_080922	8/9/22	1038		X						6					N	G	X	X	X	X	X	X	X	
PW-16-02_080922	8/9/22	1223		X						6					N	G	X	X	X	X	X	X	X	
MW-66_080922	8/9/22	1440		X						6					N	G	X	X	X	X	X	X	X	
MW-22_080922	8/9/22	1548		X						6					N	G	X	X	X	X	X	X	X	

240-171408 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	8/9/22 1645	Received by: Novi Cold Storage	Arcadis	8/9/22 1645
Relinquished by: [signature]	ARCADIS	8/10/22 0935	Received by: Jeri Hall	EETA	8/10/22 0935
Relinquished by: Jeri Hall	EETA	8/10/22 938	Received in Laboratory by: [signature]	EENC	8-11-22 930

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8/17/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 171402**
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-11-22 Opened on 8-11-22

Cooler unpacked by: Matt

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 174402

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	1.7	2.4	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 17, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171408-1
Sample date: 2022-08-09
Report received by CADENA: 2022-08-17
Initial Data Verification completed by CADENA: 2022-08-17
Number of Samples:6
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171408-1

		Sample Name:	TRIP BLANK_72				MW-54S_080922				MW-54_080922				PW-16-02_080922				MW-66_080922				MW-22_080922			
		Lab Sample ID:	2401714081				2401714082				2401714083				2401714084				2401714085				2401714086			
		Sample Date:	8/9/2022				8/9/2022				8/9/2022				8/9/2022				8/9/2022				8/9/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.1	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	40	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.83	1.0	ug/l	J	11	1.0	ug/l	---	0.49	1.0	ug/l	J	1400	40	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	4.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	55	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171590-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 12:46:37 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

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Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Job ID: 240-171590-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171590-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.7º C and 3.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171590-1	TRIP BLANK_127	Water	08/12/22 00:00	08/16/22 09:00
240-171590-2	MW-21_081222	Water	08/12/22 10:05	08/16/22 09:00
240-171590-3	MW-49_081222	Water	08/12/22 11:45	08/16/22 09:00
240-171590-4	PW-16-01_081222	Water	08/12/22 13:35	08/16/22 09:00
240-171590-5	DUP-01	Water	08/12/22 00:00	08/16/22 09:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Client Sample ID: TRIP BLANK_127 — Lab Sample ID: 240-171590-1

No Detections.

Client Sample ID: MW-21_081222 — Lab Sample ID: 240-171590-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	13		4.0	1.7	ug/L	2		8260D SIM	Total/NA
cis-1,2-Dichloroethene	140		8.0	3.7	ug/L	8		8260D	Total/NA
trans-1,2-Dichloroethene	5.0	J	8.0	4.1	ug/L	8		8260D	Total/NA
Vinyl chloride	270		8.0	3.6	ug/L	8		8260D	Total/NA

Client Sample ID: MW-49_081222 — Lab Sample ID: 240-171590-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	15		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	38000		1000	460	ug/L	1000		8260D	Total/NA
Vinyl chloride	10000		1000	450	ug/L	1000		8260D	Total/NA

Client Sample ID: PW-16-01_081222 — Lab Sample ID: 240-171590-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	50		20	9.2	ug/L	20		8260D	Total/NA
Vinyl chloride	840		20	9.0	ug/L	20		8260D	Total/NA

Client Sample ID: DUP-01 — Lab Sample ID: 240-171590-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	13		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	180		5.0	2.3	ug/L	5		8260D	Total/NA
trans-1,2-Dichloroethene	5.8		5.0	2.6	ug/L	5		8260D	Total/NA
Vinyl chloride	320		5.0	2.3	ug/L	5		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Client Sample ID: TRIP BLANK_127

Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171590-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 11:57	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 11:57	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:57	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 11:57	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:57	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 11:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 11:57*	*1*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*		*08/18/22 11:57*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/18/22 11:57*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/18/22 11:57*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Client Sample ID: MW-21_081222
Date Collected: 08/12/22 10:05
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171590-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**13**		4.0	1.7	ug/L			08/22/22 19:54	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/22/22 19:54*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	8.0	U	8.0	3.9	ug/L			08/18/22 12:19	8
cis-1,2-Dichloroethene	**140**		8.0	3.7	ug/L			08/18/22 12:19	8
Tetrachloroethene	8.0	U	8.0	3.5	ug/L			08/18/22 12:19	8
trans-1,2-Dichloroethene	**5.0**	**J**	8.0	4.1	ug/L			08/18/22 12:19	8
Trichloroethene	8.0	U	8.0	3.5	ug/L			08/18/22 12:19	8
Vinyl chloride	**270**		8.0	3.6	ug/L			08/18/22 12:19	8

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/18/22 12:19*	*8*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/18/22 12:19*	*8*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/18/22 12:19*	*8*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 12:19*	*8*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Client Sample ID: MW-49_081222
Date Collected: 08/12/22 11:45
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171590-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**15**		2.0	0.86	ug/L			08/22/22 20:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*08/22/22 20:18*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1000	U	1000	490	ug/L			08/18/22 12:41	1000
cis-1,2-Dichloroethene	**38000**		1000	460	ug/L			08/18/22 12:41	1000
Tetrachloroethene	1000	U	1000	440	ug/L			08/18/22 12:41	1000
trans-1,2-Dichloroethene	1000	U	1000	510	ug/L			08/18/22 12:41	1000
Trichloroethene	1000	U	1000	440	ug/L			08/18/22 12:41	1000
Vinyl chloride	**10000**		1000	450	ug/L			08/18/22 12:41	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*08/18/22 12:41*	*1000*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*08/18/22 12:41*	*1000*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/18/22 12:41*	*1000*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 12:41*	*1000*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Client Sample ID: PW-16-01_081222
Date Collected: 08/12/22 13:35
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171590-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 20:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/22/22 20:41*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	20	U	20	9.8	ug/L			08/18/22 14:10	20
cis-1,2-Dichloroethene	**50**		20	9.2	ug/L			08/18/22 14:10	20
Tetrachloroethene	20	U	20	8.8	ug/L			08/18/22 14:10	20
trans-1,2-Dichloroethene	20	U	20	10	ug/L			08/18/22 14:10	20
Trichloroethene	20	U	20	8.8	ug/L			08/18/22 14:10	20
Vinyl chloride	**840**		20	9.0	ug/L			08/18/22 14:10	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/18/22 14:10*	*20*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*08/18/22 14:10*	*20*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/18/22 14:10*	*20*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/18/22 14:10*	*20*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Client Sample ID: DUP-01
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Lab Sample ID: 240-171590-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**13**		2.0	0.86	ug/L			08/22/22 21:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/22/22 21:05*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			08/18/22 14:32	5
cis-1,2-Dichloroethene	**180**		5.0	2.3	ug/L			08/18/22 14:32	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			08/18/22 14:32	5
trans-1,2-Dichloroethene	**5.8**		5.0	2.6	ug/L			08/18/22 14:32	5
Trichloroethene	5.0	U	5.0	2.2	ug/L			08/18/22 14:32	5
Vinyl chloride	**320**		5.0	2.3	ug/L			08/18/22 14:32	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*62 - 137*		*08/18/22 14:32*	*5*
4-Bromofluorobenzene (Surr)	*106*		*56 - 136*		*08/18/22 14:32*	*5*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/18/22 14:32*	*5*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/18/22 14:32*	*5*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171590-1	TRIP BLANK_127	111	110	101	104
240-171590-2	MW-21_081222	109	103	100	102
240-171590-3	MW-49_081222	109	106	103	102
240-171590-3 MS	MW-49_081222	106	109	104	105
240-171590-3 MSD	MW-49_081222	105	108	104	103
240-171590-4	PW-16-01_081222	108	103	98	101
240-171590-5	DUP-01	111	106	104	104
LCS 240-539355/5	Lab Control Sample	109	110	106	107
MB 240-539355/8	Method Blank	108	104	100	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171590-2	MW-21_081222	69
240-171590-3	MW-49_081222	99
240-171590-4	PW-16-01_081222	70
240-171590-5	DUP-01	74
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539355/8

Matrix: Water
Analysis Batch: 539355

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/18/22 11:34*	*1*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*		*08/18/22 11:34*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/18/22 11:34*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/18/22 11:34*	*1*

Lab Sample ID: LCS 240-539355/5

Matrix: Water
Analysis Batch: 539355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.9		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	20.1		ug/L		100	77 - 123
Tetrachloroethene	20.0	19.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	21.3		ug/L		106	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	21.3		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*
4-Bromofluorobenzene (Surr)	*110*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*107*		*73 - 120*

Lab Sample ID: 240-171590-3 MS

Matrix: Water
Analysis Batch: 539355

Client Sample ID: MW-49_081222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1000	U	20000	21700		ug/L		109	56 - 135
cis-1,2-Dichloroethene	38000		20000	58600		ug/L		104	66 - 128
Tetrachloroethene	1000	U	20000	19700		ug/L		98	62 - 131
trans-1,2-Dichloroethene	1000	U	20000	21400		ug/L		107	56 - 136
Trichloroethene	1000	U	20000	19700		ug/L		99	61 - 124
Vinyl chloride	10000		20000	30900		ug/L		104	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*62 - 137*
4-Bromofluorobenzene (Surr)	*109*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171590-3 MS
Matrix: Water
Analysis Batch: 539355

Client Sample ID: MW-49_081222
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	105		73 - 120

Lab Sample ID: 240-171590-3 MSD
Matrix: Water
Analysis Batch: 539355

Client Sample ID: MW-49_081222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1000	U	20000	21100		ug/L		105	56 - 135	3	26
cis-1,2-Dichloroethene	38000		20000	58300		ug/L		102	66 - 128	1	14
Tetrachloroethene	1000	U	20000	19400		ug/L		97	62 - 131	1	20
trans-1,2-Dichloroethene	1000	U	20000	21300		ug/L		107	56 - 136	0	15
Trichloroethene	1000	U	20000	19100		ug/L		95	61 - 124	3	15
Vinyl chloride	10000		20000	30500		ug/L		102	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		62 - 137
4-Bromofluorobenzene (Surr)	108		56 - 136
Toluene-d8 (Surr)	104		78 - 122
Dibromofluoromethane (Surr)	103		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	68		66 - 120		08/22/22 17:51	1

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		66 - 120

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

GC/MS VOA

Analysis Batch: 539355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171590-1	TRIP BLANK_127	Total/NA	Water	8260D	
240-171590-2	MW-21_081222	Total/NA	Water	8260D	
240-171590-3	MW-49_081222	Total/NA	Water	8260D	
240-171590-4	PW-16-01_081222	Total/NA	Water	8260D	
240-171590-5	DUP-01	Total/NA	Water	8260D	
MB 240-539355/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539355/5	Lab Control Sample	Total/NA	Water	8260D	
240-171590-3 MS	MW-49_081222	Total/NA	Water	8260D	
240-171590-3 MSD	MW-49_081222	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171590-2	MW-21_081222	Total/NA	Water	8260D SIM	
240-171590-3	MW-49_081222	Total/NA	Water	8260D SIM	
240-171590-4	PW-16-01_081222	Total/NA	Water	8260D SIM	
240-171590-5	DUP-01	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Client Sample ID: TRIP BLANK_127

Lab Sample ID: 240-171590-1
Matrix: Water
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539355	TJL1	EET CAN	08/18/22 11:57

Client Sample ID: MW-21_081222

Lab Sample ID: 240-171590-2
Matrix: Water
Date Collected: 08/12/22 10:05
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		8	539355	TJL1	EET CAN	08/18/22 12:19
Total/NA	Analysis	8260D SIM		2	539746	CS	EET CAN	08/22/22 19:54

Client Sample ID: MW-49_081222

Lab Sample ID: 240-171590-3
Matrix: Water
Date Collected: 08/12/22 11:45
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1000	539355	TJL1	EET CAN	08/18/22 12:41
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 20:18

Client Sample ID: PW-16-01_081222

Lab Sample ID: 240-171590-4
Matrix: Water
Date Collected: 08/12/22 13:35
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		20	539355	TJL1	EET CAN	08/18/22 14:10
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 20:41

Client Sample ID: DUP-01

Lab Sample ID: 240-171590-5
Matrix: Water
Date Collected: 08/12/22 00:00
Date Received: 08/16/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		5	539355	TJL1	EET CAN	08/18/22 14:32
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/22/22 21:05

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171590-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_127	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-21_081222	8/12/22	1005		X						6					N	G	X	X	X	X	X	X	V	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-49_081222	8/12/22	1145		X						6					N	G	X	X	X	X	X	X	X	
PW-16-01_081222	8/12/22	1335		X						6					N	G	X	X	X	X	X	X	X	
DUP-01	8/12/22	—		X						6					N	G	X	X	X	X	X	X	X	
	~~8/12/22~~																							

240-171590 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by: Sommer Guy	Company: Arcadis	Date/Time: 8/12/22 1430	Received by: Novi Cold Storage	Company: Arcadis	Date/Time: 8/12/22 1430
Relinquished by: [signature]	Company: Arcadis	Date/Time: 8/15/22 1005	Received by: [signature]	Company: EETA	Date/Time: 8/15/22 10:00
Relinquished by: [signature]	Company: EETA	Date/Time: 8/15/22 10:00	Received in Laboratory by: [signature]	Company: BETNC	Date/Time: 8-16-22 0900

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171590
Barberton Facility

Client Arcadis Site Name Ford - Livonia

Cooler unpacked by: DME

Cooler Received on 8-16-22 Opened on 8-16-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171590

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	(IR-13) IR-15	3.0	3.7	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.8	3.8	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171590-1
Sample date: 2022-08-12
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171590-1

		Sample Name:	TRIP BLANK_127				MW-21_081222				MW-49_081222				PW-16-01_081222				DUP-01			
		Lab Sample ID:	2401715901				2401715902				2401715903				2401715904				2401715905			
		Sample Date:	8/12/2022				8/12/2022				8/12/2022				8/12/2022				8/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	1000	ug/l	---	ND	20	ug/l	---	ND	5.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	140	8.0	ug/l	---	38000	1000	ug/l	---	50	20	ug/l	---	180	5.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	1000	ug/l	---	ND	20	ug/l	---	ND	5.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	5.0	8.0	ug/l	J	ND	1000	ug/l	---	ND	20	ug/l	---	5.8	5.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	8.0	ug/l	---	ND	1000	ug/l	---	ND	20	ug/l	---	ND	5.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	270	8.0	ug/l	---	10000	1000	ug/l	---	840	20	ug/l	---	320	5.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					13	4.0	ug/l	---	15	2.0	ug/l	---	ND	2.0	ug/l	---	13	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171644-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:14:11 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Job ID: 240-171644-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171644-1

Comments
No additional comments.

Receipt
The samples were received on 8/17/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171644-1	TRIP BLANK_75	Water	08/15/22 00:00	08/17/22 09:30
240-171644-2	MW-37_081522	Water	08/15/22 12:05	08/17/22 09:30
240-171644-3	MW-38_081522	Water	08/15/22 12:50	08/17/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Client Sample ID: TRIP BLANK_75 — Lab Sample ID: 240-171644-1

No Detections.

Client Sample ID: MW-37_081522 — Lab Sample ID: 240-171644-2

No Detections.

Client Sample ID: MW-38_081522 — Lab Sample ID: 240-171644-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Client Sample ID: TRIP BLANK_75

Date Collected: 08/15/22 00:00
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171644-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 13:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 13:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 13:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/18/22 13:55*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/18/22 13:55*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/18/22 13:55*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/18/22 13:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Client Sample ID: MW-37_081522
Date Collected: 08/15/22 12:05
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171644-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 02:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/23/22 02:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/18/22 16:26*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/18/22 16:26*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/18/22 16:26*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*08/18/22 16:26*	*1*

Client Sample ID: MW-38_081522
Date Collected: 08/15/22 12:50
Date Received: 08/17/22 09:30

Lab Sample ID: 240-171644-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 02:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/23/22 02:38*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 16:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 16:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 16:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 16:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/18/22 16:51*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/18/22 16:51*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/18/22 16:51*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/18/22 16:51*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171641-A-2 MS	Matrix Spike	94	96	98	85
240-171641-I-2 MSD	Matrix Spike Duplicate	95	96	98	87
240-171644-1	TRIP BLANK_75	100	85	94	88
240-171644-2	MW-37_081522	103	85	95	85
240-171644-3	MW-38_081522	103	86	96	87
LCS 240-539383/4	Lab Control Sample	95	98	102	88
MB 240-539383/6	Method Blank	100	86	96	88

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171641-H-2 MS	Matrix Spike	72
240-171641-O-2 MSD	Matrix Spike Duplicate	70
240-171644-2	MW-37_081522	69
240-171644-3	MW-38_081522	71
LCS 240-539746/3	Lab Control Sample	80
MB 240-539746/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539383/6
Matrix: Water
Analysis Batch: 539383

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/18/22 13:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/18/22 13:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/18/22 13:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/18/22 13:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/18/22 13:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/18/22 13:04*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/18/22 13:04*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/18/22 13:04*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/18/22 13:04*	*1*

Lab Sample ID: LCS 240-539383/4
Matrix: Water
Analysis Batch: 539383

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	22.8		ug/L		91	77 - 123
Tetrachloroethene	25.0	22.3		ug/L		89	76 - 123
trans-1,2-Dichloroethene	25.0	22.7		ug/L		91	75 - 124
Trichloroethene	25.0	20.9		ug/L		83	70 - 122
Vinyl chloride	12.5	11.8		ug/L		95	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171641-A-2 MS
Matrix: Water
Analysis Batch: 539383

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	20.7		ug/L		83	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		87	56 - 136
Trichloroethene	1.0	U	25.0	19.6		ug/L		78	61 - 124
Vinyl chloride	1.0	U	12.5	11.0		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171641-A-2 MS
Matrix: Water
Analysis Batch: 539383

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	85		73 - 120

Lab Sample ID: 240-171641-I-2 MSD
Matrix: Water
Analysis Batch: 539383

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.8		ug/L		91	66 - 128	6	14
Tetrachloroethene	1.0	U	25.0	21.0		ug/L		84	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	56 - 136	3	15
Trichloroethene	1.0	U	25.0	20.7		ug/L		83	61 - 124	6	15
Vinyl chloride	1.0	U	12.5	11.7		ug/L		93	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	96		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	87		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539746/4
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/22/22 17:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	68		66 - 120		08/22/22 17:51	1

Lab Sample ID: LCS 240-539746/3
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		66 - 120

Lab Sample ID: 240-171641-H-2 MS
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*

Lab Sample ID: 240-171641-O-2 MSD
Matrix: Water
Analysis Batch: 539746

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

GC/MS VOA

Analysis Batch: 539383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171644-1	TRIP BLANK_75	Total/NA	Water	8260D	
240-171644-2	MW-37_081522	Total/NA	Water	8260D	
240-171644-3	MW-38_081522	Total/NA	Water	8260D	
MB 240-539383/6	Method Blank	Total/NA	Water	8260D	
LCS 240-539383/4	Lab Control Sample	Total/NA	Water	8260D	
240-171641-A-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171641-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171644-2	MW-37_081522	Total/NA	Water	8260D SIM	
240-171644-3	MW-38_081522	Total/NA	Water	8260D SIM	
MB 240-539746/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539746/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171641-H-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171641-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Client Sample ID: TRIP BLANK_75

Lab Sample ID: 240-171644-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 13:55

Client Sample ID: MW-37_081522

Lab Sample ID: 240-171644-2
Date Collected: 08/15/22 12:05
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 16:26
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/23/22 02:14

Client Sample ID: MW-38_081522

Lab Sample ID: 240-171644-3
Date Collected: 08/15/22 12:50
Matrix: Water
Date Received: 08/17/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539383	LEE	EET CAN	08/18/22 16:51
Total/NA	Analysis	8260D SIM		1	539746	CS	EET CAN	08/23/22 02:38

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171644-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_75	8/15/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-37_081522	8/15/22	1205		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-38_081522	8/15/22	1250		X						6					N	G	X	X	X	X	X	X	X	

240-171644 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/15/22 1330	Novi Cold Storage	Arcadis	8/15/22 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	Arcadis	8/16/22 1116	[illegible]	EE TA	8/16/22 11:15
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	EE TA	8/16/22 1120	[illegible]	EETNC	8-17-22 930

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171644
Barberton Facility

Client Arcadis Site Name

Cooler Received on 8-17-22 Opened on 8-17-22

Cooler unpacked by: Nancy Boyer

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171644-1
Sample date: 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:3
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171644-1

		Sample Name:	TRIP BLANK_75				MW-37_081522				MW-38_081522			
		Lab Sample ID:	2401716441				2401716442				2401716443			
		Sample Date:	8/15/2022				8/15/2022				8/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171739-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:36:57 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171739-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171739-1

Comments
No additional comments.

Receipt
The samples were received on 8/18/2022 2:08 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6º C and 4.3º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-539547 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_102 (240-171739-1), MW-200_081622 (240-171739-2), MW-200S_081622 (240-171739-3), MW-33_081622 (240-171739-4), (CCV 240-539547/4), (CCVIS 240-539547/3), (LCS 240-539547/5), (LCS 240-539547/6), (MB 240-539547/8), (240-171736-B-2), (240-171736-C-2 MS) and (240-171736-F-2 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171739-1	TRIP BLANK_102	Water	08/16/22 00:00	08/18/22 14:08
240-171739-2	MW-200_081622	Water	08/16/22 09:55	08/18/22 14:08
240-171739-3	MW-200S_081622	Water	08/16/22 10:40	08/18/22 14:08
240-171739-4	MW-33_081622	Water	08/16/22 11:45	08/18/22 14:08

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Client Sample ID: TRIP BLANK_102 — Lab Sample ID: 240-171739-1

No Detections.

Client Sample ID: MW-200_081622 — Lab Sample ID: 240-171739-2

No Detections.

Client Sample ID: MW-200S_081622 — Lab Sample ID: 240-171739-3

No Detections.

Client Sample ID: MW-33_081622 — Lab Sample ID: 240-171739-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Client Sample ID: TRIP BLANK_102
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171739-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 17:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 17:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 17:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 17:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 17:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/19/22 17:51*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*08/19/22 17:51*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 17:51*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 17:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Client Sample ID: MW-200_081622
Date Collected: 08/16/22 09:55
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171739-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 00:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/24/22 00:50*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 21:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 21:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 21:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 21:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 21:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 21:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/19/22 21:49*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 21:49*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*08/19/22 21:49*	*1*
Dibromofluoromethane (Surr)	*108*		*73 - 120*		*08/19/22 21:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Client Sample ID: MW-200S_081622
Date Collected: 08/16/22 10:40
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171739-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 01:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*08/24/22 01:14*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 22:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 22:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 22:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 22:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 22:12	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 22:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/19/22 22:12*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 22:12*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 22:12*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/19/22 22:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Client Sample ID: MW-33_081622
Date Collected: 08/16/22 11:45
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171739-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 01:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/24/22 01:38*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 22:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 22:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 22:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 22:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 22:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/19/22 22:36*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 22:36*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 22:36*	*1*
Dibromofluoromethane (Surr)	*109*		*73 - 120*		*08/19/22 22:36*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171736-C-2 MS	Matrix Spike	97	103	105	104
240-171736-F-2 MSD	Matrix Spike Duplicate	96	103	107	103
240-171739-1	TRIP BLANK_102	101	100	105	107
240-171739-2	MW-200_081622	102	98	105	108
240-171739-3	MW-200S_081622	103	98	104	109
240-171739-4	MW-33_081622	105	98	104	109
LCS 240-539547/5	Lab Control Sample	91	102	109	102
MB 240-539547/8	Method Blank	96	98	106	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171736-I-2 MS	Matrix Spike	75
240-171736-O-2 MSD	Matrix Spike Duplicate	74
240-171739-2	MW-200_081622	75
240-171739-3	MW-200S_081622	76
240-171739-4	MW-33_081622	75
LCS 240-539899/3	Lab Control Sample	70
MB 240-539899/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539547/8
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 15:05*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/19/22 15:05*	*1*

Lab Sample ID: LCS 240-539547/5
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	29.2		ug/L		117	76 - 123
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	21.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	19.9		ug/L		79	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.2		ug/L		81	56 - 136
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-171736-F-2 MSD
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	25.7		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.0		ug/L		88	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*103*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539899/4
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 20:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/23/22 20:09*	*1*

Lab Sample ID: LCS 240-539899/3
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.34		ug/L		93	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171736-I-2 MS
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171736-O-2 MSD
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

GC/MS VOA

Analysis Batch: 539547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171739-1	TRIP BLANK_102	Total/NA	Water	8260D	
240-171739-2	MW-200_081622	Total/NA	Water	8260D	
240-171739-3	MW-200S_081622	Total/NA	Water	8260D	
240-171739-4	MW-33_081622	Total/NA	Water	8260D	
MB 240-539547/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539547/5	Lab Control Sample	Total/NA	Water	8260D	
240-171736-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171736-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171739-2	MW-200_081622	Total/NA	Water	8260D SIM	
240-171739-3	MW-200S_081622	Total/NA	Water	8260D SIM	
240-171739-4	MW-33_081622	Total/NA	Water	8260D SIM	
MB 240-539899/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539899/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171736-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171736-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Client Sample ID: TRIP BLANK_102

Lab Sample ID: 240-171739-1
Matrix: Water
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 17:51

Client Sample ID: MW-200_081622

Lab Sample ID: 240-171739-2
Matrix: Water
Date Collected: 08/16/22 09:55
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 21:49
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 00:50

Client Sample ID: MW-200S_081622

Lab Sample ID: 240-171739-3
Matrix: Water
Date Collected: 08/16/22 10:40
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 22:12
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 01:14

Client Sample ID: MW-33_081622

Lab Sample ID: 240-171739-4
Matrix: Water
Date Collected: 08/16/22 11:45
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 22:36
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 01:38

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171739-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_102	8/16/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-202_081622	8/16/22	955		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-205_081622		1040		X						6					N	G	X	X	X	X	X	X	X	
MW-33_081622		1145		X						6					N	G	X	X	X	X	X	X	X	

240-171739 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/16/22 1230	NW Cold Storage	Arcadis	8/16/22 1230
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/17/22 1005	[signature]	EETA	8/17/22 10:40
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[signature]	EETA	8/17/22 10.10	[signature]	EETNL	8-18-22 1408

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8/29/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171438
Barberton Facility

Client Arcadis Site Name Ford Livonia

Cooler Received on 8-18-22 Opened on 8-18-22

Cooler unpacked by: (MR)

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 171738

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.6	2.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	4.3	4.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171739-1
Sample date: 2022-08-16
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171739-1

		Sample Name:	TRIP BLANK_102				MW-200_081622				MW-200S_081622				MW-33_081622			
		Lab Sample ID:	2401717391				2401717392				2401717393				2401717394			
		Sample Date:	8/16/2022				8/16/2022				8/16/2022				8/16/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171741-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/29/2022 1:40:25 PM
Nicole Kalis, Project Manager I
(330)497-9396
Nicole.Kalis@et.eurofinsus.com

Designee for

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171741-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171741-1

Comments
No additional comments.

Receipt
The samples were received on 8/18/2022 2:08 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.6º C and 4.3º C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 240-539547 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK_180 (240-171741-1), MW-64_081522 (240-171741-2), (CCV 240-539547/4), (CCVIS 240-539547/3), (LCS 240-539547/5), (LCS 240-539547/6), (MB 240-539547/8), (240-171736-B-2), (240-171736-C-2 MS) and (240-171736-F-2 MSD).

Method 8260D: The continuing calibration verification (CCV) associated with batch 240-539653 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-69_081522 (240-171741-3), MW-47_081522 (240-171741-4), MW-63_081522 (240-171741-5), MW-196S_081622 (240-171741-6), DUP-05 (240-171741-7), MW-196_081622 (240-171741-8), MW-195S_081622 (240-171741-9), MW-197S_081622 (240-171741-10), (CCV 240-539653/4), (CCVIS 240-539653/3), (LCS 240-539653/5), (LCS 240-539653/6), (MB 240-539653/8), (240-171741-C-7 MS) and (240-171741-C-7 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171741-1	TRIP BLANK_180	Water	08/15/22 00:00	08/18/22 14:08
240-171741-2	MW-64_081522	Water	08/15/22 11:35	08/18/22 14:08
240-171741-3	MW-69_081522	Water	08/15/22 13:05	08/18/22 14:08
240-171741-4	MW-47_081522	Water	08/15/22 15:00	08/18/22 14:08
240-171741-5	MW-63_081522	Water	08/15/22 16:10	08/18/22 14:08
240-171741-6	MW-196S_081622	Water	08/16/22 11:00	08/18/22 14:08
240-171741-7	DUP-05	Water	08/16/22 00:00	08/18/22 14:08
240-171741-8	MW-196_081622	Water	08/16/22 12:05	08/18/22 14:08
240-171741-9	MW-195S_081622	Water	08/16/22 13:48	08/18/22 14:08
240-171741-10	MW-197S_081622	Water	08/16/22 15:26	08/18/22 14:08

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: TRIP BLANK_180 — Lab Sample ID: 240-171741-1

No Detections.

Client Sample ID: MW-64_081522 — Lab Sample ID: 240-171741-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.8		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-69_081522 — Lab Sample ID: 240-171741-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	16		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.60	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-47_081522 — Lab Sample ID: 240-171741-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	8.1		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.8		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	20		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-63_081522 — Lab Sample ID: 240-171741-5

No Detections.

Client Sample ID: MW-196S_081622 — Lab Sample ID: 240-171741-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	61		2.0	0.92	ug/L	2		8260D	Total/NA
trans-1,2-Dichloroethene	1.6	J	2.0	1.0	ug/L	2		8260D	Total/NA
Trichloroethene	140		6.3	2.8	ug/L	6.25		8260D	Total/NA

Client Sample ID: DUP-05 — Lab Sample ID: 240-171741-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	52		6.7	3.1	ug/L	6.667		8260D	Total/NA
Trichloroethene	160		6.7	2.9	ug/L	6.667		8260D	Total/NA

Client Sample ID: MW-196_081622 — Lab Sample ID: 240-171741-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	390		10	4.6	ug/L	10		8260D	Total/NA
trans-1,2-Dichloroethene	150		10	5.1	ug/L	10		8260D	Total/NA
Trichloroethene	540		10	4.4	ug/L	10		8260D	Total/NA

Client Sample ID: MW-195S_081622 — Lab Sample ID: 240-171741-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	1.1		1.0	0.49	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	100		100	46	ug/L	100		8260D	Total/NA
trans-1,2-Dichloroethene	170		100	51	ug/L	100		8260D	Total/NA
Trichloroethene	3400		100	44	ug/L	100		8260D	Total/NA
Vinyl chloride	6.7		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-197S_081622 — Lab Sample ID: 240-171741-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	25		3.3	1.5	ug/L	3.333		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Canton

Client Sample ID: MW-197S_081622 (Continued)

Lab Sample ID: 240-171741-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	1.8	J	3.3	1.7	ug/L	3.333		8260D	Total/NA
Trichloroethene	93		3.3	1.5	ug/L	3.333		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: TRIP BLANK_180
Date Collected: 08/15/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 18:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 18:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 18:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 18:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 18:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 18:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/19/22 18:15*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/19/22 18:15*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 18:15*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 120*		*08/19/22 18:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: MW-64_081522
Date Collected: 08/15/22 11:35
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 02:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*66 - 120*		*08/24/22 02:02*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 23:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 23:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 23:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 23:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 23:00	1
Vinyl chloride	**3.8**		1.0	0.45	ug/L			08/19/22 23:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/19/22 23:00*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 23:00*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*08/19/22 23:00*	*1*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*08/19/22 23:00*	*1*

Client Sample ID: MW-69_081522
Date Collected: 08/15/22 13:05
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	16		2.0	0.86	ug/L			08/24/22 02:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/24/22 02:25*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 17:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 17:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:16	1
Vinyl chloride	0.60	J	1.0	0.45	ug/L			08/22/22 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/22/22 17:16*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/22/22 17:16*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/22/22 17:16*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/22/22 17:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: MW-47_081522

Date Collected: 08/15/22 15:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 02:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*08/24/22 02:49*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 17:40	1
cis-1,2-Dichloroethene	**8.1**		1.0	0.46	ug/L			08/22/22 17:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:40	1
trans-1,2-Dichloroethene	**1.8**		1.0	0.51	ug/L			08/22/22 17:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 17:40	1
Vinyl chloride	**20**		1.0	0.45	ug/L			08/22/22 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/22/22 17:40*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/22/22 17:40*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/22/22 17:40*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/22/22 17:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: MW-63_081522
Date Collected: 08/15/22 16:10
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*		*08/24/22 03:13*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 18:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 18:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 18:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/22/22 18:04*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/22/22 18:04*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/22/22 18:04*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/22/22 18:04*	*1*

Client Sample ID: MW-196S_081622

Date Collected: 08/16/22 11:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-6

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 03:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/24/22 03:36*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	2.0	U	2.0	0.98	ug/L			08/22/22 19:39	2
cis-1,2-Dichloroethene	**61**		2.0	0.92	ug/L			08/22/22 19:39	2
Tetrachloroethene	2.0	U	2.0	0.88	ug/L			08/22/22 19:39	2
trans-1,2-Dichloroethene	**1.6**	**J**	2.0	1.0	ug/L			08/22/22 19:39	2
Trichloroethene	**140**		6.3	2.8	ug/L			08/23/22 19:03	6.25
Vinyl chloride	2.0	U	2.0	0.90	ug/L			08/22/22 19:39	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/22/22 19:39*	*2*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/23/22 19:03*	*6.25*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/22/22 19:39*	*2*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/23/22 19:03*	*6.25*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/22/22 19:39*	*2*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/23/22 19:03*	*6.25*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/22/22 19:39*	*2*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/23/22 19:03*	*6.25*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: DUP-05
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-7
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 04:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/24/22 04:00*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	6.7	U	6.7	3.3	ug/L			08/22/22 20:27	6.667
cis-1,2-Dichloroethene	**52**		6.7	3.1	ug/L			08/22/22 20:27	6.667
Tetrachloroethene	6.7	U	6.7	2.9	ug/L			08/22/22 20:27	6.667
trans-1,2-Dichloroethene	6.7	U	6.7	3.4	ug/L			08/22/22 20:27	6.667
Trichloroethene	**160**		6.7	2.9	ug/L			08/22/22 20:27	6.667
Vinyl chloride	6.7	U	6.7	3.0	ug/L			08/22/22 20:27	6.667

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/22/22 20:27*	*6.667*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/22/22 20:27*	*6.667*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 20:27*	*6.667*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/22/22 20:27*	*6.667*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: MW-196_081622

Date Collected: 08/16/22 12:05
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-8

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 04:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/24/22 04:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	10	U	10	4.9	ug/L			08/22/22 20:03	10
cis-1,2-Dichloroethene	**390**		10	4.6	ug/L			08/22/22 20:03	10
Tetrachloroethene	10	U	10	4.4	ug/L			08/22/22 20:03	10
trans-1,2-Dichloroethene	**150**		10	5.1	ug/L			08/22/22 20:03	10
Trichloroethene	**540**		10	4.4	ug/L			08/22/22 20:03	10
Vinyl chloride	10	U	10	4.5	ug/L			08/22/22 20:03	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/22/22 20:03*	*10*
4-Bromofluorobenzene (Surr)	*84*		*56 - 136*		*08/22/22 20:03*	*10*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/22/22 20:03*	*10*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*08/22/22 20:03*	*10*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: MW-195S_081622

Date Collected: 08/16/22 13:48
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-9

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 04:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*08/24/22 04:48*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	**1.1**		1.0	0.49	ug/L			08/22/22 18:28	1
cis-1,2-Dichloroethene	**100**		100	46	ug/L			08/23/22 19:26	100
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 18:28	1
trans-1,2-Dichloroethene	**170**		100	51	ug/L			08/23/22 19:26	100
Trichloroethene	**3400**		100	44	ug/L			08/23/22 19:26	100
Vinyl chloride	**6.7**		1.0	0.45	ug/L			08/22/22 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/22/22 18:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/23/22 19:26*	*100*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/22/22 18:28*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/23/22 19:26*	*100*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/22/22 18:28*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/23/22 19:26*	*100*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/22/22 18:28*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/23/22 19:26*	*100*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: MW-197S_081622
Date Collected: 08/16/22 15:26
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-10
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 05:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*08/24/22 05:11*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	3.3	U	3.3	1.6	ug/L			08/23/22 19:50	3.333
cis-1,2-Dichloroethene	**25**		3.3	1.5	ug/L			08/23/22 19:50	3.333
Tetrachloroethene	3.3	U	3.3	1.5	ug/L			08/23/22 19:50	3.333
trans-1,2-Dichloroethene	**1.8**	**J**	3.3	1.7	ug/L			08/23/22 19:50	3.333
Trichloroethene	**93**		3.3	1.5	ug/L			08/23/22 19:50	3.333
Vinyl chloride	3.3	U	3.3	1.5	ug/L			08/23/22 19:50	3.333

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/23/22 19:50*	*3.333*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/23/22 19:50*	*3.333*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 19:50*	*3.333*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/23/22 19:50*	*3.333*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171736-C-2 MS	Matrix Spike	97	103	105	104
240-171736-F-2 MSD	Matrix Spike Duplicate	96	103	107	103
240-171741-1	TRIP BLANK_180	100	91	104	106
240-171741-2	MW-64_081522	103	98	104	107
240-171741-3	MW-69_081522	100	93	98	104
240-171741-4	MW-47_081522	100	93	99	105
240-171741-5	MW-63_081522	91	92	97	100
240-171741-6	MW-196S_081622	91	89	96	101
240-171741-6	MW-196S_081622	94	92	97	99
240-171741-7	DUP-05	90	89	95	102
240-171741-7 MS	DUP-05	87	92	96	94
240-171741-7 MSD	DUP-05	83	90	97	92
240-171741-8	MW-196_081622	92	84	96	100
240-171741-9	MW-195S_081622	95	92	98	102
240-171741-9	MW-195S_081622	93	91	97	99
240-171741-10	MW-197S_081622	93	89	94	98
LCS 240-539547/5	Lab Control Sample	91	102	109	102
LCS 240-539653/5	Lab Control Sample	94	101	107	104
LCS 240-539842/5	Lab Control Sample	93	103	107	101
MB 240-539547/8	Method Blank	96	98	106	103
MB 240-539653/8	Method Blank	96	97	104	104
MB 240-539842/8	Method Blank	94	95	102	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171736-I-2 MS	Matrix Spike	75
240-171736-O-2 MSD	Matrix Spike Duplicate	74
240-171741-2	MW-64_081522	84
240-171741-3	MW-69_081522	81
240-171741-4	MW-47_081522	76
240-171741-5	MW-63_081522	75
240-171741-6	MW-196S_081622	73
240-171741-7	DUP-05	77
240-171741-8	MW-196_081622	81
240-171741-9	MW-195S_081622	79
240-171741-10	MW-197S_081622	81
LCS 240-539899/3	Lab Control Sample	70
MB 240-539899/4	Method Blank	68

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539547/8
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/19/22 15:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/19/22 15:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/19/22 15:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/19/22 15:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/19/22 15:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/19/22 15:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/19/22 15:05*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*08/19/22 15:05*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/19/22 15:05*	*1*

Lab Sample ID: LCS 240-539547/5
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		89	77 - 123
Tetrachloroethene	25.0	29.2		ug/L		117	76 - 123
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	75 - 124
Trichloroethene	25.0	25.7		ug/L		103	70 - 122
Vinyl chloride	25.0	21.1		ug/L		85	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*109*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	19.9		ug/L		79	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128
Tetrachloroethene	1.0	U	25.0	25.1		ug/L		101	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.2		ug/L		81	56 - 136
Trichloroethene	1.0	U	25.0	21.8		ug/L		87	61 - 124
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171736-C-2 MS
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	104		73 - 120

Lab Sample ID: 240-171736-F-2 MSD
Matrix: Water
Analysis Batch: 539547

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	66 - 128	0	14
Tetrachloroethene	1.0	U	25.0	25.7		ug/L		103	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.3		ug/L		81	56 - 136	1	15
Trichloroethene	1.0	U	25.0	22.0		ug/L		88	61 - 124	1	15
Vinyl chloride	1.0	U	25.0	19.4		ug/L		77	43 - 157	0	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		62 - 137
4-Bromofluorobenzene (Surr)	103		56 - 136
Toluene-d8 (Surr)	107		78 - 122
Dibromofluoromethane (Surr)	103		73 - 120

Lab Sample ID: MB 240-539653/8
Matrix: Water
Analysis Batch: 539653

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 13:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 13:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 13:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 13:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 13:20	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 13:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137		08/22/22 13:20	1
4-Bromofluorobenzene (Surr)	97		56 - 136		08/22/22 13:20	1
Toluene-d8 (Surr)	104		78 - 122		08/22/22 13:20	1
Dibromofluoromethane (Surr)	104		73 - 120		08/22/22 13:20	1

Lab Sample ID: LCS 240-539653/5
Matrix: Water
Analysis Batch: 539653

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	25.1		ug/L		100	63 - 134
cis-1,2-Dichloroethene	25.0	24.0		ug/L		96	77 - 123
Tetrachloroethene	25.0	29.8		ug/L		119	76 - 123
trans-1,2-Dichloroethene	25.0	24.4		ug/L		98	75 - 124
Trichloroethene	25.0	26.9		ug/L		108	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-539653/5
Matrix: Water
Analysis Batch: 539653

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	21.1		ug/L		84	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Lab Sample ID: 240-171741-7 MS
Matrix: Water
Analysis Batch: 539653

Client Sample ID: DUP-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	6.7	U	167	164		ug/L		98	56 - 135		
cis-1,2-Dichloroethene	52		167	205		ug/L		92	66 - 128		
Tetrachloroethene	6.7	U	167	211		ug/L		127	62 - 131		
trans-1,2-Dichloroethene	6.7	U	167	162		ug/L		97	56 - 136		
Trichloroethene	160		167	324		ug/L		100	61 - 124		
Vinyl chloride	6.7	U	167	137		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-171741-7 MSD
Matrix: Water
Analysis Batch: 539653

Client Sample ID: DUP-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	6.7	U	167	152		ug/L		91	56 - 135	7	26
cis-1,2-Dichloroethene	52		167	202		ug/L		90	66 - 128	2	14
Tetrachloroethene	6.7	U	167	211		ug/L		126	62 - 131	0	20
trans-1,2-Dichloroethene	6.7	U	167	158		ug/L		95	56 - 136	3	15
Trichloroethene	160		167	314		ug/L		94	61 - 124	3	15
Vinyl chloride	6.7	U	167	133		ug/L		80	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-539842/8
Matrix: Water
Analysis Batch: 539842

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 13:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 13:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 13:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 13:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/23/22 13:55*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 13:55*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/23/22 13:55*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/23/22 13:55*	*1*

Lab Sample ID: LCS 240-539842/5
Matrix: Water
Analysis Batch: 539842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.2		ug/L		89	63 - 134
cis-1,2-Dichloroethene	25.0	22.9		ug/L		91	77 - 123
Tetrachloroethene	25.0	28.8		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	26.3		ug/L		105	70 - 122
Vinyl chloride	25.0	20.0		ug/L		80	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-539899/4
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/23/22 20:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*68*		*66 - 120*		*08/23/22 20:09*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-539899/3
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.34		ug/L		93	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171736-I-2 MS
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.87		ug/L		99	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*66 - 120*

Lab Sample ID: 240-171736-O-2 MSD
Matrix: Water
Analysis Batch: 539899

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

GC/MS VOA

Analysis Batch: 539547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171741-1	TRIP BLANK_180	Total/NA	Water	8260D	
240-171741-2	MW-64_081522	Total/NA	Water	8260D	
MB 240-539547/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539547/5	Lab Control Sample	Total/NA	Water	8260D	
240-171736-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171736-F-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 539653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171741-3	MW-69_081522	Total/NA	Water	8260D	
240-171741-4	MW-47_081522	Total/NA	Water	8260D	
240-171741-5	MW-63_081522	Total/NA	Water	8260D	
240-171741-6	MW-196S_081622	Total/NA	Water	8260D	
240-171741-7	DUP-05	Total/NA	Water	8260D	
240-171741-8	MW-196_081622	Total/NA	Water	8260D	
240-171741-9	MW-195S_081622	Total/NA	Water	8260D	
MB 240-539653/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539653/5	Lab Control Sample	Total/NA	Water	8260D	
240-171741-7 MS	DUP-05	Total/NA	Water	8260D	
240-171741-7 MSD	DUP-05	Total/NA	Water	8260D	

Analysis Batch: 539842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171741-6	MW-196S_081622	Total/NA	Water	8260D	
240-171741-9	MW-195S_081622	Total/NA	Water	8260D	
240-171741-10	MW-197S_081622	Total/NA	Water	8260D	
MB 240-539842/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539842/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 539899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171741-2	MW-64_081522	Total/NA	Water	8260D SIM	
240-171741-3	MW-69_081522	Total/NA	Water	8260D SIM	
240-171741-4	MW-47_081522	Total/NA	Water	8260D SIM	
240-171741-5	MW-63_081522	Total/NA	Water	8260D SIM	
240-171741-6	MW-196S_081622	Total/NA	Water	8260D SIM	
240-171741-7	DUP-05	Total/NA	Water	8260D SIM	
240-171741-8	MW-196_081622	Total/NA	Water	8260D SIM	
240-171741-9	MW-195S_081622	Total/NA	Water	8260D SIM	
240-171741-10	MW-197S_081622	Total/NA	Water	8260D SIM	
MB 240-539899/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-539899/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171736-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171736-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: TRIP BLANK_180
Lab Sample ID: 240-171741-1
Date Collected: 08/15/22 00:00
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 18:15

Client Sample ID: MW-64_081522
Lab Sample ID: 240-171741-2
Date Collected: 08/15/22 11:35
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539547	SAM	EET CAN	08/19/22 23:00
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 02:02

Client Sample ID: MW-69_081522
Lab Sample ID: 240-171741-3
Date Collected: 08/15/22 13:05
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539653	SAM	EET CAN	08/22/22 17:16
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 02:25

Client Sample ID: MW-47_081522
Lab Sample ID: 240-171741-4
Date Collected: 08/15/22 15:00
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539653	SAM	EET CAN	08/22/22 17:40
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 02:49

Client Sample ID: MW-63_081522
Lab Sample ID: 240-171741-5
Date Collected: 08/15/22 16:10
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539653	SAM	EET CAN	08/22/22 18:04
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 03:13

Client Sample ID: MW-196S_081622
Lab Sample ID: 240-171741-6
Date Collected: 08/16/22 11:00
Matrix: Water
Date Received: 08/18/22 14:08

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		2	539653	SAM	EET CAN	08/22/22 19:39
Total/NA	Analysis	8260D		6.25	539842	SAM	EET CAN	08/23/22 19:03
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 03:36

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Client Sample ID: DUP-05
Date Collected: 08/16/22 00:00
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		6.667	539653	SAM	EET CAN	08/22/22 20:27
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 04:00

Client Sample ID: MW-196_081622
Date Collected: 08/16/22 12:05
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		10	539653	SAM	EET CAN	08/22/22 20:03
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 04:24

Client Sample ID: MW-195S_081622
Date Collected: 08/16/22 13:48
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539653	SAM	EET CAN	08/22/22 18:28
Total/NA	Analysis	8260D		100	539842	SAM	EET CAN	08/23/22 19:26
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 04:48

Client Sample ID: MW-197S_081622
Date Collected: 08/16/22 15:26
Date Received: 08/18/22 14:08

Lab Sample ID: 240-171741-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		3.333	539842	SAM	EET CAN	08/23/22 19:50
Total/NA	Analysis	8260D SIM		1	539899	CS	EET CAN	08/24/22 05:11

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171741-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Samantha Hindle	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:		
Project Number: 30080642.401.03	Shipping/Tracking No:		
PO # 30080642.401.03			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_180	8/15/22			X						6					N	G	X	X	X	X	X	X		1 Trip Blank
MW-64_081522	8/15/22	11:35		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-69_081522	8/15/22	13:05		X						6					N	G	X	X	X	X	X	X	X	
MW-47_081522	8/15/22	15:00		X						6					N	G	X	X	X	X	X	X	X	
MW-63_081522	8/15/22	16:10		X						6					N	G	X	X	X	X	X	X	X	
MW-196S_081622	8/16/22	11:00		X						6					N	G	X	X	X	X	X	X	X	
Dup-05	8/16/22	—		X						6					N	G	X	X	X	X	X	X	X	
MW-196_081622	8/16/22	12:05		X						6					N	G	X	X	X	X	X	X	X	
MW-195S_081622	8/16/22	13:48		X						6					N	G	X	X	X	X	X	X	X	
MW-197S_081622	8/16/22	15:26		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Samantha Hindle	Arcadis	8/16/22 16:30	NOVI COLD STORAGE	Arcadis	8/16/22 16:30
[illegible]	Arcadis	8/17/22 1005	[illegible]	FEDEX	8/17/22 10:00
[illegible]	FEDEX	8/17/22 10:10	Received in Laboratory by: [illegible]	Company: EGTNC	Date/Time: 8-18-22 1408

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240-171741 Chain of Custody

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 171741
Barberton Facility

Client Arcadis Site Name Ford Livonia

Cooler unpacked by: MR

Cooler Received on 8-18-22 Opened on 8-18-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 171741

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	2.6	2.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	4.3	4.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

August 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171741-1
Sample date: 2022-08-16 2022-08-15
Report received by CADENA: 2022-08-29
Initial Data Verification completed by CADENA: 2022-08-29
Number of Samples:10
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171741-1

		Sample Name:	TRIP BLANK_180				MW-197S_081622				MW-64_081522				MW-69_081522				MW-47_081522				MW-63_081522				MW-196S_081622				DUP-05				MW-196_081622				MW-195S_081622			
		Lab Sample ID:	2401717411				24017174110				2401717412				2401717413				2401717414				2401717415				2401717416				2401717417				2401717418				2401717419			
		Sample Date:	8/15/2022				8/16/2022				8/15/2022				8/15/2022				8/15/2022				8/15/2022				8/16/2022				8/16/2022				8/16/2022				8/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																																								
OSW-8260D																																								
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	ND	6.7	ug/l	---	ND	10	ug/l	---	1.1	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	25	3.3	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	8.1	1.0	ug/l	---	ND	1.0	ug/l	---	61	2.0	ug/l	---	52	6.7	ug/l	---	390	10	ug/l	---	100	100	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	3.3	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	ND	6.7	ug/l	---	ND	10	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	1.8	3.3	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.8	1.0	ug/l	---	ND	1.0	ug/l	---	1.6	2.0	ug/l	J	ND	6.7	ug/l	---	150	10	ug/l	---	170	100	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	93	3.3	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	140	6.3	ug/l	---	160	6.7	ug/l	---	540	10	ug/l	---	3400	100	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	3.3	ug/l	---	3.8	1.0	ug/l	---	0.60	1.0	ug/l	J	20	1.0	ug/l	---	ND	1.0	ug/l	---	ND	2.0	ug/l	---	ND	6.7	ug/l	---	ND	10	ug/l	---	6.7	1.0	ug/l	---
OSW-8260DSIM																																								
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	16	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171821-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
9/2/2022 8:51:14 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Job ID: 240-171821-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171821-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171821-1	TRIP BLANK_96	Water	08/17/22 00:00	08/19/22 09:50
240-171821-2	MW-25_081722	Water	08/17/22 09:25	08/19/22 09:50
240-171821-3	MW-01_081722	Water	08/17/22 10:30	08/19/22 09:50
240-171821-4	MW-219S_081722	Water	08/17/22 11:45	08/19/22 09:50
240-171821-5	MW-221S_081722	Water	08/17/22 12:45	08/19/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Client Sample ID: TRIP BLANK_96 — Lab Sample ID: 240-171821-1

No Detections.

Client Sample ID: MW-25_081722 — Lab Sample ID: 240-171821-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.1	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-01_081722 — Lab Sample ID: 240-171821-3

No Detections.

Client Sample ID: MW-219S_081722 — Lab Sample ID: 240-171821-4

No Detections.

Client Sample ID: MW-221S_081722 — Lab Sample ID: 240-171821-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	6.6		1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Client Sample ID: TRIP BLANK_96
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 19:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 19:34*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 19:34*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 19:34*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/22/22 19:34*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Client Sample ID: MW-25_081722

Date Collected: 08/17/22 09:25
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.1	J	2.0	0.86	ug/L			08/25/22 02:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/25/22 02:31*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 19:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 19:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 19:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 19:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/22/22 19:59*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 19:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/22/22 19:59*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/22/22 19:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Client Sample ID: MW-01_081722
Date Collected: 08/17/22 10:30
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 02:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*66 - 120*		*08/25/22 02:56*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 20:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 20:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 20:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 20:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 20:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/22/22 20:24*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/22/22 20:24*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 20:24*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 20:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Client Sample ID: MW-219S_081722
Date Collected: 08/17/22 11:45
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/24/22 21:53*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 20:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 20:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 20:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 20:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 20:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/22/22 20:49*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/22/22 20:49*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/22/22 20:49*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/22/22 20:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Client Sample ID: MW-221S_081722
Date Collected: 08/17/22 12:45
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 03:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/25/22 03:22*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:32	1
cis-1,2-Dichloroethene	**6.6**		1.0	0.46	ug/L			08/23/22 12:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/23/22 12:32*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 12:32*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 12:32*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/23/22 12:32*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171821-1	TRIP BLANK_96	89	94	93	89
240-171821-2	MW-25_081722	90	95	94	88
240-171821-3	MW-01_081722	91	94	93	86
240-171821-4	MW-219S_081722	90	96	93	88
240-171821-4 MS	MW-219S-MS_081722	88	91	96	88
240-171821-4 MSD	MW-219S-MSD_081722	85	93	95	86
240-171821-5	MW-221S_081722	90	95	94	89
240-171824-E-2 MS	Matrix Spike	87	90	96	88
240-171824-H-2 MSD	Matrix Spike Duplicate	86	90	93	86
LCS 240-539643/5	Lab Control Sample	86	92	97	86
LCS 240-539814/5	Lab Control Sample	87	93	95	86
MB 240-539643/8	Method Blank	89	95	95	86
MB 240-539814/8	Method Blank	89	93	95	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171821-2	MW-25_081722	91
240-171821-3	MW-01_081722	95
240-171821-4	MW-219S_081722	88
240-171821-4 MS	MW-219S-MS_081722	86
240-171821-4 MSD	MW-219S-MSD_081722	88
240-171821-5	MW-221S_081722	90
LCS 240-540081/3	Lab Control Sample	91
MB 240-540081/4	Method Blank	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539643/8
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/22/22 12:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/22/22 12:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/22/22 12:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/22/22 12:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/22/22 12:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/22/22 12:29*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/22/22 12:29*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/22/22 12:29*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*08/22/22 12:29*	*1*

Lab Sample ID: LCS 240-539643/5
Matrix: Water
Analysis Batch: 539643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	17.0		ug/L		85	77 - 123
Tetrachloroethene	20.0	19.3		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124
Trichloroethene	20.0	17.5		ug/L		88	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171821-4 MS
Matrix: Water
Analysis Batch: 539643

Client Sample ID: MW-219S-MS_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.4		ug/L		87	66 - 128
Tetrachloroethene	1.0	U	20.0	18.4		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.7		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	16.8		ug/L		84	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171821-4 MS
Matrix: Water
Analysis Batch: 539643

Client Sample ID: MW-219S-MS_081722
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	88		73 - 120

Lab Sample ID: 240-171821-4 MSD
Matrix: Water
Analysis Batch: 539643

Client Sample ID: MW-219S-MSD_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		87	66 - 128	0	14
Tetrachloroethene	1.0	U	20.0	18.6		ug/L		93	62 - 131	1	20
trans-1,2-Dichloroethene	1.0	U	20.0	19.3		ug/L		96	56 - 136	1	15
Trichloroethene	1.0	U	20.0	17.5		ug/L		87	61 - 124	1	15
Vinyl chloride	1.0	U	20.0	18.3		ug/L		91	43 - 157	9	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	85		62 - 137
4-Bromofluorobenzene (Surr)	93		56 - 136
Toluene-d8 (Surr)	95		78 - 122
Dibromofluoromethane (Surr)	86		73 - 120

Lab Sample ID: MB 240-539814/8
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 12:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		62 - 137		08/23/22 12:03	1
4-Bromofluorobenzene (Surr)	93		56 - 136		08/23/22 12:03	1
Toluene-d8 (Surr)	95		78 - 122		08/23/22 12:03	1
Dibromofluoromethane (Surr)	87		73 - 120		08/23/22 12:03	1

Lab Sample ID: LCS 240-539814/5
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.3		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	18.4		ug/L		92	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	20.0		ug/L		100	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-539814/5
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	17.9		ug/L		90	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171824-E-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128		
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	56 - 136		
Trichloroethene	1.0	U	20.0	17.3		ug/L		86	61 - 124		
Vinyl chloride	1.0	U	20.0	17.3		ug/L		86	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171824-H-2 MSD
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	20.3		ug/L		102	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 136	6	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*08/24/22 18:05*	*1*

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171821-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: MW-219S-MS_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-4 MSD
Matrix: Water
Analysis Batch: 540081

Client Sample ID: MW-219S-MSD_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

GC/MS VOA

Analysis Batch: 539643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171821-1	TRIP BLANK_96	Total/NA	Water	8260D	
240-171821-2	MW-25_081722	Total/NA	Water	8260D	
240-171821-3	MW-01_081722	Total/NA	Water	8260D	
240-171821-4	MW-219S_081722	Total/NA	Water	8260D	
MB 240-539643/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539643/5	Lab Control Sample	Total/NA	Water	8260D	
240-171821-4 MS	MW-219S-MS_081722	Total/NA	Water	8260D	
240-171821-4 MSD	MW-219S-MSD_081722	Total/NA	Water	8260D	

Analysis Batch: 539814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171821-5	MW-221S_081722	Total/NA	Water	8260D	
MB 240-539814/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539814/5	Lab Control Sample	Total/NA	Water	8260D	
240-171824-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-171824-H-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171821-2	MW-25_081722	Total/NA	Water	8260D SIM	
240-171821-3	MW-01_081722	Total/NA	Water	8260D SIM	
240-171821-4	MW-219S_081722	Total/NA	Water	8260D SIM	
240-171821-5	MW-221S_081722	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-4 MS	MW-219S-MS_081722	Total/NA	Water	8260D SIM	
240-171821-4 MSD	MW-219S-MSD_081722	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Client Sample ID: TRIP BLANK_96
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 19:34

Client Sample ID: MW-25_081722
Date Collected: 08/17/22 09:25
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 19:59
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 02:31

Client Sample ID: MW-01_081722
Date Collected: 08/17/22 10:30
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 20:24
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 02:56

Client Sample ID: MW-219S_081722
Date Collected: 08/17/22 11:45
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539643	LEE	EET CAN	08/22/22 20:49
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/24/22 21:53

Client Sample ID: MW-221S_081722
Date Collected: 08/17/22 12:45
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171821-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 12:32
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 03:22

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

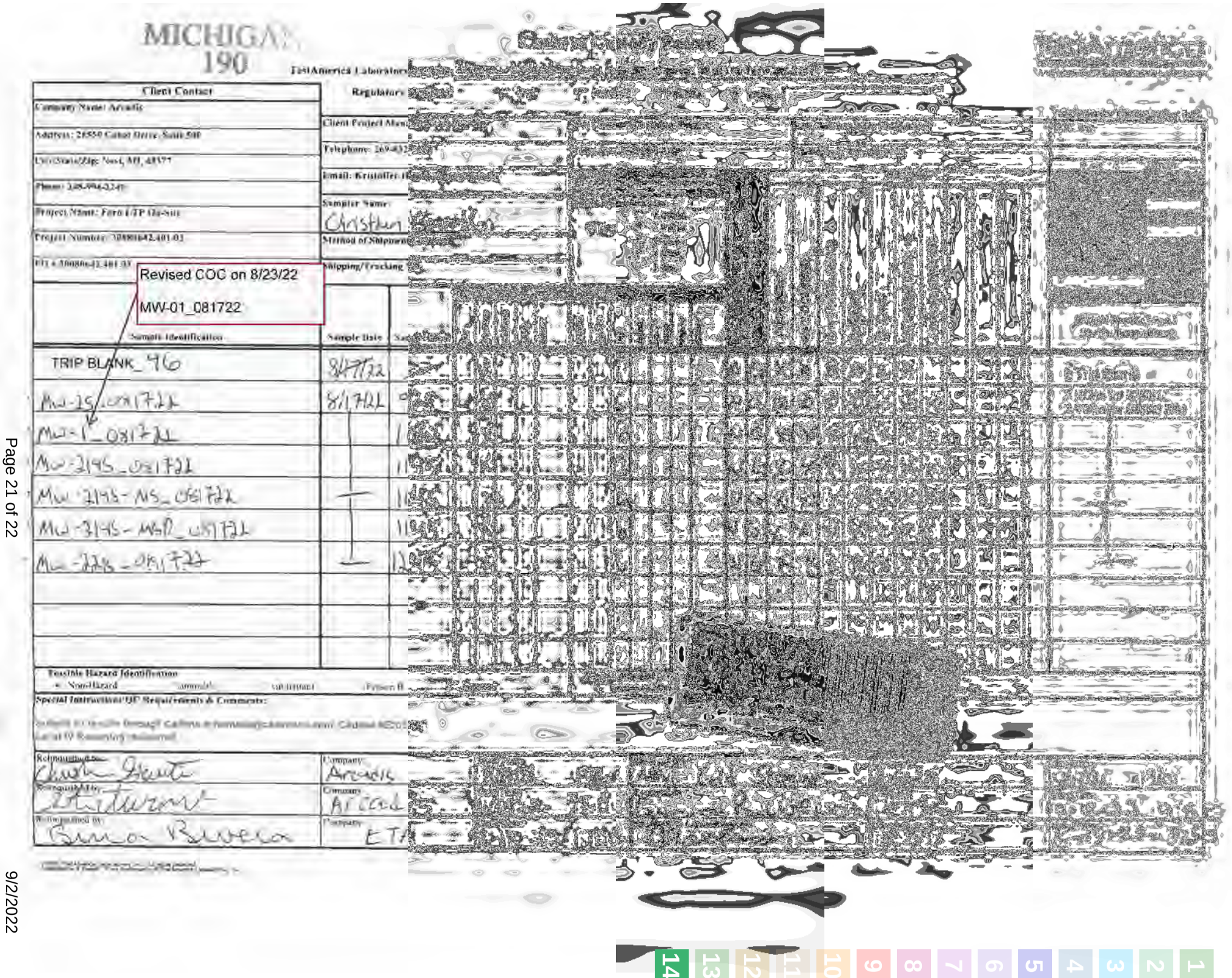
Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171821-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22



MICHIGA
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TestAmerica Laboratories

Client Contact	Regulatory
Company Name: Arcadis	Client Project Man
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-83
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.H
Phone: 248-994-2240	Sampler Name: Christen
Project Name: Ford UTP Oil-Soil	Method of Shipment
Project Number: 30000042.401.03	Shipping/Tracking
PO # 30000042.401.03	

Revised COC on 8/23/22

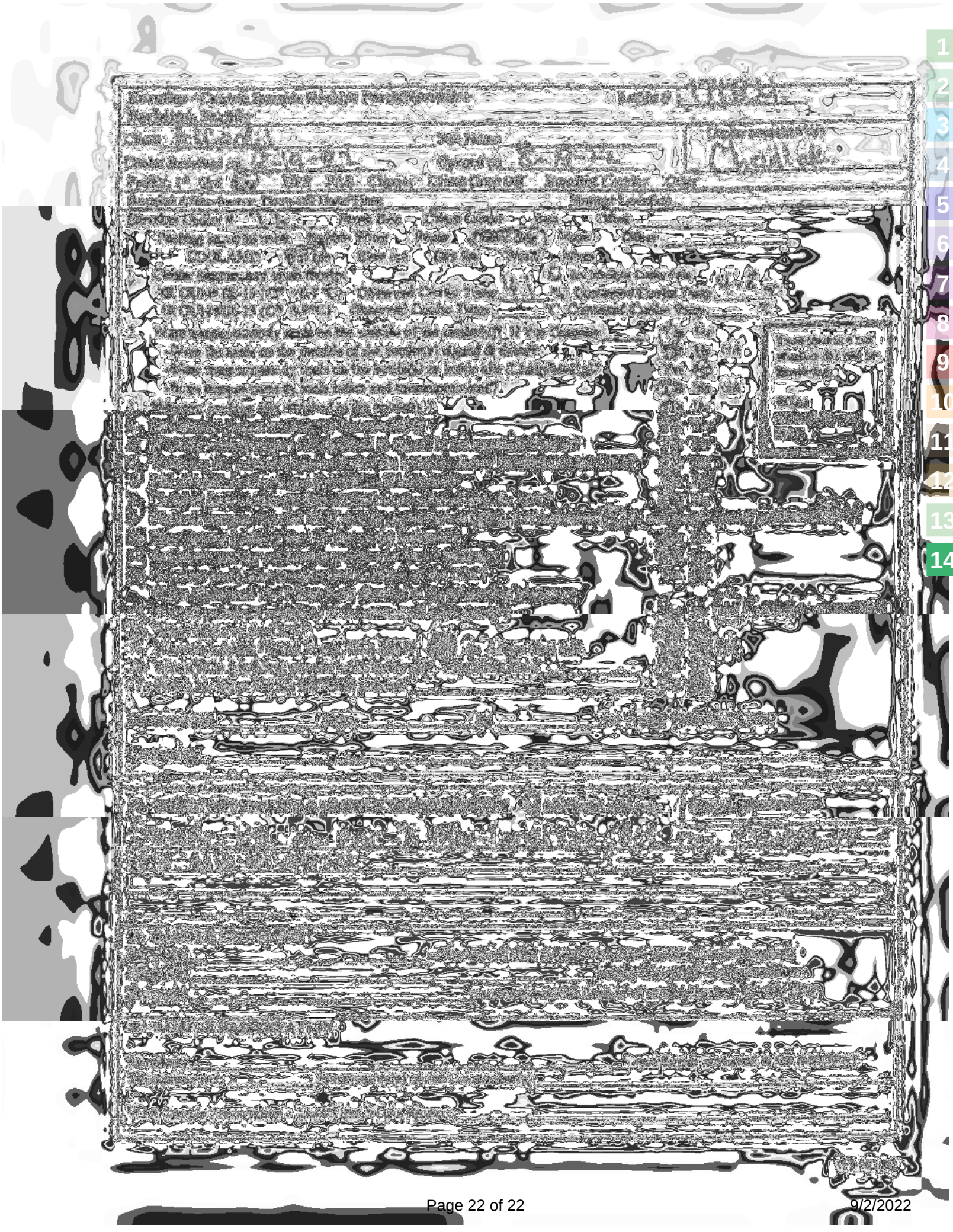
MW-01_081722

Sample Identification	Sample Date	Sa
TRIP BLANK_96	8/17/22	
MW-25_081722	8/17/22	0
MW-1_081722		1
MW-3195_081722		11
MW-3195-MS_081722		11
MW-3195-MSD_081722		11
MW-228_081722		12

Possible Hazard Identification
Non-Hazard

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:
Christen Heuta	Arcadis
Relinquished by:	Company:
Kristoffer	Arcad
Relinquished by:	Company:
Simon Rivera	ETA



DATA VERIFICATION REPORT

September 02, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171821-1
Sample date: 2022-08-17
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-02
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171821-1

		Sample Name:	TRIP BLANK_96				MW-25_081722				MW-01_081722				MW-219S_081722				MW-221S_081722			
		Lab Sample ID:	2401718211				2401718212				2401718213				2401718214				2401718215			
		Sample Date:	8/17/2022				8/17/2022				8/17/2022				8/17/2022				8/17/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	6.6	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					1.1	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171824-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/31/2022 1:49:39 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
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Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171824-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171824-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171824-1	TRIP BLANK_112	Water	08/17/22 00:00	08/19/22 09:50
240-171824-2	MW-39_081722	Water	08/17/22 09:10	08/19/22 09:50
240-171824-3	MW-32_081722	Water	08/17/22 10:30	08/19/22 09:50
240-171824-4	MW-218S_081722	Water	08/17/22 11:25	08/19/22 09:50
240-171824-5	MW-18_081722	Water	08/17/22 13:40	08/19/22 09:50
240-171824-6	MW-68_081722	Water	08/17/22 15:18	08/19/22 09:50

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: TRIP BLANK_112 — Lab Sample ID: 240-171824-1

No Detections.

Client Sample ID: MW-39_081722 — Lab Sample ID: 240-171824-2

No Detections.

Client Sample ID: MW-32_081722 — Lab Sample ID: 240-171824-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.47	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-218S_081722 — Lab Sample ID: 240-171824-4

No Detections.

Client Sample ID: MW-18_081722 — Lab Sample ID: 240-171824-5

No Detections.

Client Sample ID: MW-68_081722 — Lab Sample ID: 240-171824-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.1		1.0	0.46	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: TRIP BLANK_112
Date Collected: 08/17/22 00:00
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171824-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 12:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 12:58*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/23/22 12:58*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 12:58*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 12:58*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: MW-39_081722
Date Collected: 08/17/22 09:10
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171824-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/25/22 20:59*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 13:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 13:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 13:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:23	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 13:23*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/23/22 13:23*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*08/23/22 13:23*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 13:23*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: MW-32_081722
Date Collected: 08/17/22 10:30
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171824-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 03:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/25/22 03:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 14:38	1
cis-1,2-Dichloroethene	**0.47**	**J**	1.0	0.46	ug/L			08/23/22 14:38	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:38	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 14:38	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:38	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 14:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/23/22 14:38*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/23/22 14:38*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*08/23/22 14:38*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 14:38*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: MW-218S_081722
Date Collected: 08/17/22 11:25
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171824-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/25/22 22:15*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 15:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 15:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 15:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 15:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 15:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/23/22 15:03*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/23/22 15:03*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 15:03*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 15:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: MW-18_081722

Date Collected: 08/17/22 13:40
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171824-5

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/25/22 22:40*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 15:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 15:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 15:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 15:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 15:28	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 15:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*08/23/22 15:28*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/23/22 15:28*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/23/22 15:28*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 15:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: MW-68_081722
Date Collected: 08/17/22 15:18
Date Received: 08/19/22 09:50

Lab Sample ID: 240-171824-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 23:05*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 15:53	1
cis-1,2-Dichloroethene	**1.1**		1.0	0.46	ug/L			08/23/22 15:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 15:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 15:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 15:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/23/22 15:53*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 15:53*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/23/22 15:53*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*08/23/22 15:53*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171824-1	TRIP BLANK_112	89	94	93	87
240-171824-2	MW-39_081722	89	94	91	88
240-171824-2 MS	MW-39-MS_081722	87	90	96	88
240-171824-2 MSD	MW-39-MSD_081722	86	90	93	86
240-171824-3	MW-32_081722	88	93	92	87
240-171824-4	MW-218S_081722	88	96	93	88
240-171824-5	MW-18_081722	88	96	94	87
240-171824-6	MW-68_081722	90	95	93	88
LCS 240-539814/5	Lab Control Sample	87	93	95	86
MB 240-539814/8	Method Blank	89	93	95	87

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171821-I-4 MS	Matrix Spike	86
240-171821-M-4 MSD	Matrix Spike Duplicate	88
240-171824-2	MW-39_081722	90
240-171824-2 MS	MW-39-MS_081722	90
240-171824-2 MSD	MW-39-MSD_081722	90
240-171824-3	MW-32_081722	88
240-171824-4	MW-218S_081722	89
240-171824-5	MW-18_081722	89
240-171824-6	MW-68_081722	92
LCS 240-540081/3	Lab Control Sample	91
LCS 240-540264/3	Lab Control Sample	90
MB 240-540081/4	Method Blank	93
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539814/8
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 12:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 12:03	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 12:03	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 12:03	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 12:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*08/23/22 12:03*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/23/22 12:03*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/23/22 12:03*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*08/23/22 12:03*	*1*

Lab Sample ID: LCS 240-539814/5
Matrix: Water
Analysis Batch: 539814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	17.3		ug/L		87	63 - 134
cis-1,2-Dichloroethene	20.0	18.4		ug/L		92	77 - 123
Tetrachloroethene	20.0	19.4		ug/L		97	76 - 123
trans-1,2-Dichloroethene	20.0	20.0		ug/L		100	75 - 124
Trichloroethene	20.0	18.8		ug/L		94	70 - 122
Vinyl chloride	20.0	17.9		ug/L		90	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Lab Sample ID: 240-171824-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: MW-39-MS_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	16.7		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.1		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	20.0	18.7		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.0		ug/L		95	56 - 136
Trichloroethene	1.0	U	20.0	17.3		ug/L		86	61 - 124
Vinyl chloride	1.0	U	20.0	17.3		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171824-2 MS
Matrix: Water
Analysis Batch: 539814

Client Sample ID: MW-39-MS_081722
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171824-2 MSD
Matrix: Water
Analysis Batch: 539814

Client Sample ID: MW-39-MSD_081722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 135	11	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.0		ug/L		90	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	20.3		ug/L		102	62 - 131	8	20
trans-1,2-Dichloroethene	1.0	U	20.0	20.2		ug/L		101	56 - 136	6	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	7	15
Vinyl chloride	1.0	U	20.0	18.5		ug/L		93	43 - 157	7	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*
Dibromofluoromethane (Surr)	*86*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540081/4
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/24/22 18:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*66 - 120*		*08/24/22 18:05*	*1*

Lab Sample ID: LCS 240-540081/3
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*

Lab Sample ID: 240-171821-I-4 MS
Matrix: Water
Analysis Batch: 540081

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.9		ug/L		109	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*

Lab Sample ID: 240-171821-M-4 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540081

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.1		ug/L		111	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

Lab Sample ID: MB 240-540264/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540264

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540264

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-2 MS — **Client Sample ID: MW-39-MS_081722**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540264

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-2 MSD — **Client Sample ID: MW-39-MSD_081722**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 540264

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171824-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: MW-39-MSD_081722
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

GC/MS VOA

Analysis Batch: 539814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171824-1	TRIP BLANK_112	Total/NA	Water	8260D	
240-171824-2	MW-39_081722	Total/NA	Water	8260D	
240-171824-3	MW-32_081722	Total/NA	Water	8260D	
240-171824-4	MW-218S_081722	Total/NA	Water	8260D	
240-171824-5	MW-18_081722	Total/NA	Water	8260D	
240-171824-6	MW-68_081722	Total/NA	Water	8260D	
MB 240-539814/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539814/5	Lab Control Sample	Total/NA	Water	8260D	
240-171824-2 MS	MW-39-MS_081722	Total/NA	Water	8260D	
240-171824-2 MSD	MW-39-MSD_081722	Total/NA	Water	8260D	

Analysis Batch: 540081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171824-3	MW-32_081722	Total/NA	Water	8260D SIM	
MB 240-540081/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540081/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171821-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171821-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171824-2	MW-39_081722	Total/NA	Water	8260D SIM	
240-171824-4	MW-218S_081722	Total/NA	Water	8260D SIM	
240-171824-5	MW-18_081722	Total/NA	Water	8260D SIM	
240-171824-6	MW-68_081722	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-2 MS	MW-39-MS_081722	Total/NA	Water	8260D SIM	
240-171824-2 MSD	MW-39-MSD_081722	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Client Sample ID: TRIP BLANK_112
Lab Sample ID: 240-171824-1
Date Collected: 08/17/22 00:00
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 12:58

Client Sample ID: MW-39_081722
Lab Sample ID: 240-171824-2
Date Collected: 08/17/22 09:10
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 13:23
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/25/22 20:59

Client Sample ID: MW-32_081722
Lab Sample ID: 240-171824-3
Date Collected: 08/17/22 10:30
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 14:38
Total/NA	Analysis	8260D SIM		1	540081	CS	EET CAN	08/25/22 03:47

Client Sample ID: MW-218S_081722
Lab Sample ID: 240-171824-4
Date Collected: 08/17/22 11:25
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 15:03
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/25/22 22:15

Client Sample ID: MW-18_081722
Lab Sample ID: 240-171824-5
Date Collected: 08/17/22 13:40
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 15:28
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/25/22 22:40

Client Sample ID: MW-68_081722
Lab Sample ID: 240-171824-6
Date Collected: 08/17/22 15:18
Matrix: Water
Date Received: 08/19/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539814	LEE	EET CAN	08/23/22 15:53
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/25/22 23:05

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171824-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day (3 weeks, 2 weeks, 1 week, 2 days, 1 day)		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30080642.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_112	8/17/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-39_081722	8/17/22	0910		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-39-MS_081722	8/17/22	0910		X						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-39-MSD_081722	8/17/22	0910		X						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-32_081722	8/17/22	1030		X						6					N	G	X	X	X	X	X	X	X	
MW-2185_081722	8/17/22	1125		X						6					N	G	X	X	X	X	X	X	X	
MW-18_081722	8/17/22	1340		X						6					N	G	X	X	X	X	X	X	X	
MW-68_081722	8/17/22	1518		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ M

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

240-171824 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/17/22 1630	Novi Cold Storage	Arcadis	8/17/22 1630
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/18/22 950	Gina Rivera	ETA	8-18-22 9:5[illegible]
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
Gina Rivera	ETA	8-18-22 1700	[signature]	ETA	8/19/22 9:5[illegible]

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Eurofins - Canton Sample Receipt Form/Narrative **Login # : 174824**
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Charick

Cooler Received on 8-19-22 Opened on 8-19-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # (A) Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam ~~Plastic Bag~~ None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.8 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	(Yes)	(No)
-Were tamper/custody seals intact and uncompromised? JH 8-30-22	(Yes)	(No) NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171824-1
Sample date: 2022-08-17
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:6
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171824-1

		Sample Name:	TRIP BLANK_112				MW-39_081722				MW-32_081722				MW-218S_081722				MW-18_081722				MW-68_081722			
		Lab Sample ID:	2401718241				2401718242				2401718243				2401718244				2401718245				2401718246			
		Sample Date:	8/17/2022				8/17/2022				8/17/2022				8/17/2022				8/17/2022				8/17/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.47	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.1	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171854-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
8/31/2022 1:50:56 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through myEOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-171854-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171854-1

Comments
No additional comments.

Receipt
The samples were received on 8/20/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171854-1	TRIP BLANK_88	Water	08/18/22 00:00	08/20/22 09:35
240-171854-2	MW-220S_081822	Water	08/18/22 10:26	08/20/22 09:35
240-171854-3	MW-46_081822	Water	08/18/22 12:20	08/20/22 09:35
240-171854-4	MW-50_081822	Water	08/18/22 13:55	08/20/22 09:35
240-171854-5	MW-70_081822	Water	08/18/22 15:00	08/20/22 09:35
240-171854-6	DUP-03	Water	08/18/22 00:00	08/20/22 09:35

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: TRIP BLANK_88 — Lab Sample ID: 240-171854-1

No Detections.

Client Sample ID: MW-220S_081822 — Lab Sample ID: 240-171854-2

No Detections.

Client Sample ID: MW-46_081822 — Lab Sample ID: 240-171854-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.6		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	4.3		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	32		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-50_081822 — Lab Sample ID: 240-171854-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	10		7.1	3.3	ug/L	7.143		8260D	Total/NA
Vinyl chloride	160		7.1	3.2	ug/L	7.143		8260D	Total/NA

Client Sample ID: MW-70_081822 — Lab Sample ID: 240-171854-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	120		13	5.8	ug/L	12.5		8260D	Total/NA
Vinyl chloride	280		13	5.6	ug/L	12.5		8260D	Total/NA

Client Sample ID: DUP-03 — Lab Sample ID: 240-171854-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	12		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	190		5.0	2.3	ug/L	5		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: TRIP BLANK_88

Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 14:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 14:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 14:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/23/22 14:19*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 14:19*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/23/22 14:19*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/23/22 14:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: MW-220S_081822

Date Collected: 08/18/22 10:26
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 23:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/25/22 23:56*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 14:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 14:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 14:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 14:43	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/23/22 14:43*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*08/23/22 14:43*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*08/23/22 14:43*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/23/22 14:43*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: MW-46_081822

Date Collected: 08/18/22 12:20
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.6**		2.0	0.86	ug/L			08/26/22 00:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*66 - 120*		*08/26/22 00:21*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 19:11	1
cis-1,2-Dichloroethene	**4.3**		1.0	0.46	ug/L			08/24/22 19:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 19:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 19:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 19:11	1
Vinyl chloride	**32**		1.0	0.45	ug/L			08/24/22 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/24/22 19:11*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/24/22 19:11*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/24/22 19:11*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/24/22 19:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: MW-50_081822

Date Collected: 08/18/22 13:55
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 00:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/26/22 00:46*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	7.1	U	7.1	3.5	ug/L			08/24/22 20:45	7.143
cis-1,2-Dichloroethene	**10**		7.1	3.3	ug/L			08/24/22 20:45	7.143
Tetrachloroethene	7.1	U	7.1	3.1	ug/L			08/24/22 20:45	7.143
trans-1,2-Dichloroethene	7.1	U	7.1	3.6	ug/L			08/24/22 20:45	7.143
Trichloroethene	7.1	U	7.1	3.1	ug/L			08/24/22 20:45	7.143
Vinyl chloride	**160**		7.1	3.2	ug/L			08/24/22 20:45	7.143

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/24/22 20:45*	*7.143*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/24/22 20:45*	*7.143*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/24/22 20:45*	*7.143*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/24/22 20:45*	*7.143*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: MW-70_081822

Date Collected: 08/18/22 15:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-5

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.4**	**J**	2.0	0.86	ug/L			08/26/22 01:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*08/26/22 01:12*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			08/24/22 21:09	12.5
cis-1,2-Dichloroethene	**120**		13	5.8	ug/L			08/24/22 21:09	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			08/24/22 21:09	12.5
trans-1,2-Dichloroethene	13	U	13	6.4	ug/L			08/24/22 21:09	12.5
Trichloroethene	13	U	13	5.5	ug/L			08/24/22 21:09	12.5
Vinyl chloride	**280**		13	5.6	ug/L			08/24/22 21:09	12.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/24/22 21:09*	*12.5*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/24/22 21:09*	*12.5*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/24/22 21:09*	*12.5*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/24/22 21:09*	*12.5*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: DUP-03
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-6
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 01:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/26/22 01:37*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 19:34	1
cis-1,2-Dichloroethene	**12**		1.0	0.46	ug/L			08/24/22 19:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 19:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 19:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 19:34	1
Vinyl chloride	**190**		5.0	2.3	ug/L			08/29/22 21:22	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/24/22 19:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/29/22 21:22*	*5*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/24/22 19:34*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*08/29/22 21:22*	*5*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/24/22 19:34*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/29/22 21:22*	*5*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/24/22 19:34*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/29/22 21:22*	*5*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171854-1	TRIP BLANK_88	94	95	101	101
240-171854-2	MW-220S_081822	98	96	101	102
240-171854-3	MW-46_081822	95	91	98	99
240-171854-4	MW-50_081822	96	90	93	99
240-171854-5	MW-70_081822	94	89	95	97
240-171854-5 MS	MW-70_081822	87	92	95	92
240-171854-5 MSD	MW-70_081822	89	94	96	93
240-171854-6	DUP-03	90	89	97	97
240-171854-6	DUP-03	98	90	95	102
240-171854-6 MS	DUP-03	91	96	98	97
240-171854-6 MSD	DUP-03	90	93	97	97
LCS 240-539842/5	Lab Control Sample	93	103	107	101
LCS 240-539996/5	Lab Control Sample	95	102	106	99
LCS 240-540508/5	Lab Control Sample	95	102	107	102
MB 240-539842/8	Method Blank	94	95	102	101
MB 240-539996/8	Method Blank	98	97	102	103
MB 240-540508/8	Method Blank	98	98	113	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171824-G-2 MS	Matrix Spike	90
240-171824-M-2 MSD	Matrix Spike Duplicate	90
240-171854-2	MW-220S_081822	91
240-171854-3	MW-46_081822	91
240-171854-4	MW-50_081822	88
240-171854-5	MW-70_081822	90
240-171854-6	DUP-03	87
LCS 240-540264/3	Lab Control Sample	90
MB 240-540264/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539842/8
Matrix: Water
Analysis Batch: 539842

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/23/22 13:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/23/22 13:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/23/22 13:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/23/22 13:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/23/22 13:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/23/22 13:55*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/23/22 13:55*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/23/22 13:55*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/23/22 13:55*	*1*

Lab Sample ID: LCS 240-539842/5
Matrix: Water
Analysis Batch: 539842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.2		ug/L		89	63 - 134
cis-1,2-Dichloroethene	25.0	22.9		ug/L		91	77 - 123
Tetrachloroethene	25.0	28.8		ug/L		115	76 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
Trichloroethene	25.0	26.3		ug/L		105	70 - 122
Vinyl chloride	25.0	20.0		ug/L		80	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: MB 240-539996/8
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/24/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/24/22 13:39*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/24/22 13:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-539996/8
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	103		73 - 120		08/24/22 13:39	1

Lab Sample ID: LCS 240-539996/5
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			25.0	24.1		ug/L		96	63 - 134		
cis-1,2-Dichloroethene			25.0	22.9		ug/L		91	77 - 123		
Tetrachloroethene			25.0	28.6		ug/L		114	76 - 123		
trans-1,2-Dichloroethene			25.0	23.1		ug/L		93	75 - 124		
Trichloroethene			25.0	25.9		ug/L		104	70 - 122		
Vinyl chloride			25.0	20.7		ug/L		83	60 - 144		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	102		56 - 136
Toluene-d8 (Surr)	106		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-171854-5 MS
Matrix: Water
Analysis Batch: 539996

Client Sample ID: MW-70_081822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	13	U	313	285		ug/L		91	56 - 135		
cis-1,2-Dichloroethene	120		313	391		ug/L		87	66 - 128		
Tetrachloroethene	13	U	313	345		ug/L		110	62 - 131		
trans-1,2-Dichloroethene	13	U	313	275		ug/L		88	56 - 136		
Trichloroethene	13	U	313	300		ug/L		96	61 - 124		
Vinyl chloride	280		313	501		ug/L		71	43 - 157		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	87		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	95		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120

Lab Sample ID: 240-171854-5 MSD
Matrix: Water
Analysis Batch: 539996

Client Sample ID: MW-70_081822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	313	269		ug/L		86	56 - 135	6	26
cis-1,2-Dichloroethene	120		313	386		ug/L		86	66 - 128	1	14
Tetrachloroethene	13	U	313	344		ug/L		110	62 - 131	0	20
trans-1,2-Dichloroethene	13	U	313	276		ug/L		88	56 - 136	0	15
Trichloroethene	13	U	313	297		ug/L		95	61 - 124	1	15

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171854-5 MSD
Matrix: Water
Analysis Batch: 539996

Client Sample ID: MW-70_081822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	280		313	494		ug/L		69	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: MB 240-540508/8
Matrix: Water
Analysis Batch: 540508

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 13:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 13:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 13:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 13:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 13:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 13:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/29/22 13:29*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*08/29/22 13:29*	*1*
Toluene-d8 (Surr)	*113*		*78 - 122*		*08/29/22 13:29*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/29/22 13:29*	*1*

Lab Sample ID: LCS 240-540508/5
Matrix: Water
Analysis Batch: 540508

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.3		ug/L		97	63 - 134
cis-1,2-Dichloroethene	25.0	23.2		ug/L		93	77 - 123
Tetrachloroethene	25.0	28.5		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	26.5		ug/L		106	70 - 122
Vinyl chloride	25.0	20.6		ug/L		82	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*102*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171854-6 MS
Matrix: Water
Analysis Batch: 540508

Client Sample ID: DUP-03
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride	190		125	269		ug/L		65	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-171854-6 MSD
Matrix: Water
Analysis Batch: 540508

Client Sample ID: DUP-03
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	190		125	270		ug/L		66	43 - 157	0	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540264/4
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/25/22 19:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/25/22 19:43*	*1*

Lab Sample ID: LCS 240-540264/3
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	10.3		ug/L		103	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171824-G-2 MS
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	11.4		ug/L		114	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

Lab Sample ID: 240-171824-M-2 MSD
Matrix: Water
Analysis Batch: 540264

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

GC/MS VOA

Analysis Batch: 539842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171854-1	TRIP BLANK_88	Total/NA	Water	8260D	
240-171854-2	MW-220S_081822	Total/NA	Water	8260D	
MB 240-539842/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539842/5	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 539996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171854-3	MW-46_081822	Total/NA	Water	8260D	
240-171854-4	MW-50_081822	Total/NA	Water	8260D	
240-171854-5	MW-70_081822	Total/NA	Water	8260D	
240-171854-6	DUP-03	Total/NA	Water	8260D	
MB 240-539996/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539996/5	Lab Control Sample	Total/NA	Water	8260D	
240-171854-5 MS	MW-70_081822	Total/NA	Water	8260D	
240-171854-5 MSD	MW-70_081822	Total/NA	Water	8260D	

Analysis Batch: 540264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171854-2	MW-220S_081822	Total/NA	Water	8260D SIM	
240-171854-3	MW-46_081822	Total/NA	Water	8260D SIM	
240-171854-4	MW-50_081822	Total/NA	Water	8260D SIM	
240-171854-5	MW-70_081822	Total/NA	Water	8260D SIM	
240-171854-6	DUP-03	Total/NA	Water	8260D SIM	
MB 240-540264/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540264/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171824-G-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171824-M-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 540508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171854-6	DUP-03	Total/NA	Water	8260D	
MB 240-540508/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540508/5	Lab Control Sample	Total/NA	Water	8260D	
240-171854-6 MS	DUP-03	Total/NA	Water	8260D	
240-171854-6 MSD	DUP-03	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Client Sample ID: TRIP BLANK_88
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539842	SAM	EET CAN	08/23/22 14:19

Client Sample ID: MW-220S_081822
Date Collected: 08/18/22 10:26
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539842	SAM	EET CAN	08/23/22 14:43
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/25/22 23:56

Client Sample ID: MW-46_081822
Date Collected: 08/18/22 12:20
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 19:11
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 00:21

Client Sample ID: MW-50_081822
Date Collected: 08/18/22 13:55
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		7.143	539996	BAJ	EET CAN	08/24/22 20:45
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 00:46

Client Sample ID: MW-70_081822
Date Collected: 08/18/22 15:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		12.5	539996	BAJ	EET CAN	08/24/22 21:09
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 01:12

Client Sample ID: DUP-03
Date Collected: 08/18/22 00:00
Date Received: 08/20/22 09:35

Lab Sample ID: 240-171854-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 19:34
Total/NA	Analysis	8260D		5	540508	SAM	EET CAN	08/29/22 21:22
Total/NA	Analysis	8260D SIM		1	540264	CS	EET CAN	08/26/22 01:37

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171854-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 88	—	—		X					1						N	G	X	X	X	X	X	X		1 Trip Blank
MW-2205_081822	8/18/22	1026		X					6						N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-46_081822	8/18/22	1220		X					6						N	G	X	X	X	X	X	X	X	
MW-50_081822	8/18/22	1355		X					6						N	G	X	X	X	X	X	X	X	
MW-70_081822	8/18/22	1500		X					6						N	G	X	X	X	X	X	X	X	
DUP-03	8/18/22	—		X					6						N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples ar: ☐ Return to Client ☑ Disposal By Lab

240-171854 Chain of Custody

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Sommer Guy	Arcadis	8/18/22 1600	Novi Cold Storage	Arcadis	8/18/22 1600
Relinquished by:	Arcadis	8/19/22 1000		ETA	8/19/22 1000
Relinquished by:	ETA	8/19/22 1100	Received in Laboratory by:	EETNC	8-20-22 0935

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name Livonia LTP
Cooler Received on 8-20-22 Opened on 8-20-22
Cooler unpacked by: TME
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No	**Tests that are not checked for pH by Receiving:** VOAs, Oil and Grease, TOC
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA	
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA	
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No	
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA	
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	(Yes) No	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

August 31, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171854-1
Sample date: 2022-08-18
Report received by CADENA: 2022-08-31
Initial Data Verification completed by CADENA: 2022-08-31
Number of Samples:6
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171854-1

		Sample Name:	TRIP BLANK_88				MW-220S_081822				MW-46_081822				MW-50_081822				MW-70_081822				DUP-03			
		Lab Sample ID:	2401718541				2401718542				2401718543				2401718544				2401718545				2401718546			
		Sample Date:	8/18/2022				8/18/2022				8/18/2022				8/18/2022				8/18/2022				8/18/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	ND	1.0	ug/l	---	4.3	1.0	ug/l	---	10	7.1	ug/l	---	120	13	ug/l	---	12	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	32	1.0	ug/l	---	160	7.1	ug/l	---	280	13	ug/l	---	190	5.0	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	4.6	2.0	ug/l	---	ND	2.0	ug/l	---	1.4	2.0	ug/l	J	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171934-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
9/2/2022 9:07:04 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Job ID: 240-171934-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171934-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
Method 8260D SIM: The following volatiles samples was diluted due to foaming at the time of purging during the original sample analysis: MW-211S_082022 (240-171934-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171934-1	TRIP BLANK_97	Water	08/20/22 00:00	08/23/22 09:30
240-171934-2	MW-211S_082022	Water	08/20/22 08:50	08/23/22 09:30
240-171934-3	MW-35_082022	Water	08/20/22 10:10	08/23/22 09:30
240-171934-4	MW-43_082022	Water	08/20/22 10:55	08/23/22 09:30
240-171934-5	MW_52_082022	Water	08/20/22 11:50	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Client Sample ID: TRIP BLANK_97 — Lab Sample ID: 240-171934-1

No Detections.

Client Sample ID: MW-211S_082022 — Lab Sample ID: 240-171934-2

No Detections.

Client Sample ID: MW-35_082022 — Lab Sample ID: 240-171934-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.3		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.7		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-43_082022 — Lab Sample ID: 240-171934-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW_52_082022 — Lab Sample ID: 240-171934-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.8	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.7		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Client Sample ID: TRIP BLANK_97
Date Collected: 08/20/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 14:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 14:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 14:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 14:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 14:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 14:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/24/22 14:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/24/22 14:27*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*08/24/22 14:27*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/24/22 14:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Client Sample ID: MW-211S_082022

Date Collected: 08/20/22 08:50
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			08/27/22 02:07	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*66 - 120*		*08/27/22 02:07*	*2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 16:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 16:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/24/22 16:49*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*08/24/22 16:49*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*08/24/22 16:49*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/24/22 16:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Client Sample ID: MW-35_082022
Date Collected: 08/20/22 10:10
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.3		2.0	0.86	ug/L			08/27/22 02:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*		*08/27/22 02:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 17:12	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 17:12	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 17:12	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 17:12	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 17:12	1
Vinyl chloride	2.7		1.0	0.45	ug/L			08/24/22 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*08/24/22 17:12*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/24/22 17:12*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/24/22 17:12*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/24/22 17:12*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Client Sample ID: MW-43_082022

Date Collected: 08/20/22 10:55
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			08/27/22 02:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*08/27/22 02:58*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 17:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 17:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 17:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 17:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 17:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/24/22 17:36*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/24/22 17:36*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/24/22 17:36*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/24/22 17:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Client Sample ID: MW_52_082022
Date Collected: 08/20/22 11:50
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.8**	**J**	2.0	0.86	ug/L			08/27/22 03:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*66 - 120*		*08/27/22 03:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 18:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 18:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 18:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 18:00	1
Vinyl chloride	**1.7**		1.0	0.45	ug/L			08/24/22 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*08/24/22 18:00*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/24/22 18:00*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/24/22 18:00*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/24/22 18:00*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171854-C-5 MS	Matrix Spike	87	92	95	92
240-171854-C-5 MSD	Matrix Spike Duplicate	89	94	96	93
240-171934-1	TRIP BLANK_97	98	95	103	103
240-171934-2	MW-211S_082022	97	93	100	101
240-171934-3	MW-35_082022	101	94	99	102
240-171934-4	MW-43_082022	100	94	99	103
240-171934-5	MW_52_082022	97	92	99	102
LCS 240-539996/5	Lab Control Sample	95	102	106	99
MB 240-539996/8	Method Blank	98	97	102	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171934-2	MW-211S_082022	89
240-171934-3	MW-35_082022	87
240-171934-4	MW-43_082022	88
240-171934-5	MW_52_082022	86
240-171972-G-3 MS	Matrix Spike	88
240-171972-M-3 MSD	Matrix Spike Duplicate	87
LCS 240-540388/3	Lab Control Sample	92
MB 240-540388/4	Method Blank	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-539996/8
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/24/22 13:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/24/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/24/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/24/22 13:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/24/22 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/24/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/24/22 13:39*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*08/24/22 13:39*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/24/22 13:39*	*1*

Lab Sample ID: LCS 240-539996/5
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.1		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.9		ug/L		91	77 - 123
Tetrachloroethene	25.0	28.6		ug/L		114	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		93	75 - 124
Trichloroethene	25.0	25.9		ug/L		104	70 - 122
Vinyl chloride	25.0	20.7		ug/L		83	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-171854-C-5 MS
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	313	285		ug/L		91	56 - 135
cis-1,2-Dichloroethene	120		313	391		ug/L		87	66 - 128
Tetrachloroethene	13	U	313	345		ug/L		110	62 - 131
trans-1,2-Dichloroethene	13	U	313	275		ug/L		88	56 - 136
Trichloroethene	13	U	313	300		ug/L		96	61 - 124
Vinyl chloride	280		313	501		ug/L		71	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171854-C-5 MS
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*92*		*73 - 120*

Lab Sample ID: 240-171854-C-5 MSD
Matrix: Water
Analysis Batch: 539996

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	313	269		ug/L		86	56 - 135	6	26
cis-1,2-Dichloroethene	120		313	386		ug/L		86	66 - 128	1	14
Tetrachloroethene	13	U	313	344		ug/L		110	62 - 131	0	20
trans-1,2-Dichloroethene	13	U	313	276		ug/L		88	56 - 136	0	15
Trichloroethene	13	U	313	297		ug/L		95	61 - 124	1	15
Vinyl chloride	280		313	494		ug/L		69	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540388/4
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 18:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*08/26/22 18:32*	*1*

Lab Sample ID: LCS 240-540388/3
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*

Lab Sample ID: 240-171972-G-3 MS
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.2		ug/L		112	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*

Lab Sample ID: 240-171972-M-3 MSD
Matrix: Water
Analysis Batch: 540388

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	11.5		ug/L		115	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*87*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

GC/MS VOA

Analysis Batch: 539996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171934-1	TRIP BLANK_97	Total/NA	Water	8260D	
240-171934-2	MW-211S_082022	Total/NA	Water	8260D	
240-171934-3	MW-35_082022	Total/NA	Water	8260D	
240-171934-4	MW-43_082022	Total/NA	Water	8260D	
240-171934-5	MW_52_082022	Total/NA	Water	8260D	
MB 240-539996/8	Method Blank	Total/NA	Water	8260D	
LCS 240-539996/5	Lab Control Sample	Total/NA	Water	8260D	
240-171854-C-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-171854-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171934-2	MW-211S_082022	Total/NA	Water	8260D SIM	
240-171934-3	MW-35_082022	Total/NA	Water	8260D SIM	
240-171934-4	MW-43_082022	Total/NA	Water	8260D SIM	
240-171934-5	MW_52_082022	Total/NA	Water	8260D SIM	
MB 240-540388/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540388/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171972-G-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171972-M-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Client Sample ID: TRIP BLANK_97
Date Collected: 08/20/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 14:27

Client Sample ID: MW-211S_082022
Date Collected: 08/20/22 08:50
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 16:49
Total/NA	Analysis	8260D SIM		2	540388	CS	EET CAN	08/27/22 02:07

Client Sample ID: MW-35_082022
Date Collected: 08/20/22 10:10
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 17:12
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 02:33

Client Sample ID: MW-43_082022
Date Collected: 08/20/22 10:55
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 17:36
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 02:58

Client Sample ID: MW_52_082022
Date Collected: 08/20/22 11:50
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171934-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	539996	BAJ	EET CAN	08/24/22 18:00
Total/NA	Analysis	8260D SIM		1	540388	CS	EET CAN	08/27/22 03:23

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171934-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783
City/State/Zip: Novi, MI, 48377	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time	COC No: 1 of 1 COCs
Phone: 248-994-2240	Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day	For lab use only: Walk-in client; Lab sampling; Job/SDG No:
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:		
Project Number: 30080642.401.03	Shipping/Tracking No:		
PO # 30080642.401.03			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_97	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-21S_082022	8/20/22	850		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-35_082022		1010		X						6					N	G	X	X	X	X	X	X	X	
MW-43_082022		1055		X						6					N	G	X	X	X	X	X	X	X	
MW-52_082022	—	1150		X						6					N	G	X	X	X	X	X	X	X	—

240-171934 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	8/20/22 1245	Novi Cold Storage	Arcadis	8/20/22 1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[illegible]	ARCADIS	8/22/22 1120	[illegible]	Gmorris	8/22/22 1120
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
[illegible]	Gmorris	8/23/22	Rachel Harris	BETNL	8-23-22 9:30

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCadis Site Name _____ Cooler unpacked by: Rachelle Handel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? (Yes) No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC[illegible] 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(1) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

September 02, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171934-1
Sample date: 2022-08-20
Report received by CADENA: 2022-09-02
Initial Data Verification completed by CADENA: 2022-09-02
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171934-1

	Sample Name:	TRIP BLANK_97				MW-211S_082022				MW-35_082022				MW-43_082022				MW_52_082022			
	Lab Sample ID:	2401719341				2401719342				2401719343				2401719344				2401719345			
	Sample Date:	8/20/2022				8/20/2022				8/20/2022				8/20/2022				8/20/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.7	1.0	ug/l	---	ND	1.0	ug/l	---	1.7	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	4.0	ug/l	---	3.3	2.0	ug/l	---	1.4	2.0	ug/l	J	1.8	2.0	ug/l	J

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171954-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
9/7/2022 11:30:10 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Job ID: 240-171954-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171954-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
Method 8260D SIM: The following volatiles samples was diluted due to foaming at the time of purging during the original sample analysis: MW-58_081922 (240-171954-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171954-1	TRIP BLANK_134	Water	08/19/22 00:00	08/23/22 09:30
240-171954-2	MW-58_081922	Water	08/19/22 10:58	08/23/22 09:30
240-171954-3	MW-48R_081922	Water	08/19/22 11:40	08/23/22 09:30
240-171954-4	MW-67_081922	Water	08/19/22 13:55	08/23/22 09:30
240-171954-5	DUP-04	Water	08/19/22 00:00	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Client Sample ID: TRIP BLANK_134 — Lab Sample ID: 240-171954-1

No Detections.

Client Sample ID: MW-58_081922 — Lab Sample ID: 240-171954-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.6		2.4	1.0	ug/L	1.2		8260D SIM	Total/NA

Client Sample ID: MW-48R_081922 — Lab Sample ID: 240-171954-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	12		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-67_081922 — Lab Sample ID: 240-171954-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.2		1.0	0.46	ug/L	1		8260D	Total/NA
Trichloroethene	67		1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-04 — Lab Sample ID: 240-171954-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.2		1.0	0.46	ug/L	1		8260D	Total/NA
Trichloroethene	67		1.0	0.44	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Client Sample ID: TRIP BLANK_134
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171954-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 16:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 16:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/26/22 16:49*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/26/22 16:49*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/26/22 16:49*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*08/26/22 16:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Client Sample ID: MW-58_081922
Date Collected: 08/19/22 10:58
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171954-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.6		2.4	1.0	ug/L			08/30/22 02:00	1.2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/30/22 02:00*	*1.2*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:11	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:11	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:11	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:11	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:11	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*08/26/22 17:11*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/26/22 17:11*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 17:11*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/26/22 17:11*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Client Sample ID: MW-48R_081922
Date Collected: 08/19/22 11:40
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171954-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**12**		2.0	0.86	ug/L			08/27/22 05:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/27/22 05:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 17:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:33	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			08/26/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*08/26/22 17:33*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 17:33*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 17:33*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/26/22 17:33*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Client Sample ID: MW-67_081922

Date Collected: 08/19/22 13:55
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171954-4

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 05:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*		*08/27/22 05:31*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 17:55	1
cis-1,2-Dichloroethene	**3.2**		1.0	0.46	ug/L			08/26/22 17:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 17:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 17:55	1
Trichloroethene	**67**		1.0	0.44	ug/L			08/26/22 17:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/26/22 17:55*	*1*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*		*08/26/22 17:55*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/26/22 17:55*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/26/22 17:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Client Sample ID: DUP-04
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171954-5
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/27/22 05:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/27/22 05:55*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 18:17	1
cis-1,2-Dichloroethene	**3.2**		1.0	0.46	ug/L			08/26/22 18:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 18:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 18:17	1
Trichloroethene	**67**		1.0	0.44	ug/L			08/26/22 18:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*		*08/26/22 18:17*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/26/22 18:17*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/26/22 18:17*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*08/26/22 18:17*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171925-F-3 MS	Matrix Spike	102	98	97	93
240-171925-F-3 MSD	Matrix Spike Duplicate	101	96	97	94
240-171954-1	TRIP BLANK_134	102	91	95	92
240-171954-2	MW-58_081922	105	92	97	94
240-171954-3	MW-48R_081922	108	95	97	94
240-171954-4	MW-67_081922	100	94	95	91
240-171954-5	DUP-04	102	91	95	91
LCS 240-540306/5	Lab Control Sample	96	88	88	88
MB 240-540306/8	Method Blank	96	83	89	89

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171954-2	MW-58_081922	80
240-171954-3	MW-48R_081922	74
240-171954-4	MW-67_081922	74
240-171954-5	DUP-04	73
240-171965-G-5 MS	Matrix Spike	83
240-171965-M-5 MSD	Matrix Spike Duplicate	77
240-171967-G-4 MS	Matrix Spike	76
240-171967-M-4 MSD	Matrix Spike Duplicate	77
LCS 240-540396/3	Lab Control Sample	70
LCS 240-540607/4	Lab Control Sample	77
MB 240-540396/4	Method Blank	71
MB 240-540607/5	Method Blank	69

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540306/8
Matrix: Water
Analysis Batch: 540306

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 11:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 11:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 11:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 11:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/26/22 11:29*	*1*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*		*08/26/22 11:29*	*1*
Toluene-d8 (Surr)	*89*		*78 - 122*		*08/26/22 11:29*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*08/26/22 11:29*	*1*

Lab Sample ID: LCS 240-540306/5
Matrix: Water
Analysis Batch: 540306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.9		ug/L		110	63 - 134
cis-1,2-Dichloroethene	20.0	21.1		ug/L		105	77 - 123
Tetrachloroethene	20.0	18.9		ug/L		94	76 - 123
trans-1,2-Dichloroethene	20.0	21.8		ug/L		109	75 - 124
Trichloroethene	20.0	19.6		ug/L		98	70 - 122
Vinyl chloride	20.0	17.3		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*
Toluene-d8 (Surr)	*88*		*78 - 122*
Dibromofluoromethane (Surr)	*88*		*73 - 120*

Lab Sample ID: 240-171925-F-3 MS
Matrix: Water
Analysis Batch: 540306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	400	430		ug/L		108	56 - 135
cis-1,2-Dichloroethene	77		400	485		ug/L		102	66 - 128
Tetrachloroethene	10	J	400	378		ug/L		92	62 - 131
trans-1,2-Dichloroethene	20	U	400	430		ug/L		108	56 - 136
Trichloroethene	22		400	394		ug/L		93	61 - 124
Vinyl chloride	20	U	400	354		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171925-F-3 MS
Matrix: Water
Analysis Batch: 540306

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-171925-F-3 MSD
Matrix: Water
Analysis Batch: 540306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	443		ug/L		111	56 - 135	3	26
cis-1,2-Dichloroethene	77		400	499		ug/L		105	66 - 128	3	14
Tetrachloroethene	10	J	400	378		ug/L		92	62 - 131	0	20
trans-1,2-Dichloroethene	20	U	400	440		ug/L		110	56 - 136	2	15
Trichloroethene	22		400	402		ug/L		95	61 - 124	2	15
Vinyl chloride	20	U	400	360		ug/L		90	43 - 157	2	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540396/4
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/26/22 21:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*71*		*66 - 120*		*08/26/22 21:41*	*1*

Lab Sample ID: LCS 240-540396/3
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.61		ug/L		96	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*

Lab Sample ID: 240-171965-G-5 MS
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	11.0		ug/L		110	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*83*		*66 - 120*

Lab Sample ID: 240-171965-M-5 MSD
Matrix: Water
Analysis Batch: 540396

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.6		ug/L		106	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: MB 240-540607/5
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/29/22 23:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*69*		*66 - 120*		*08/29/22 23:13*	*1*

Lab Sample ID: LCS 240-540607/4
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.94		ug/L		99	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: 240-171967-G-4 MS
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	6.2		10.0	16.5		ug/L		102	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-171967-M-4 MSD
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	6.2		10.0	16.3		ug/L		101	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171967-M-4 MSD
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

GC/MS VOA

Analysis Batch: 540306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171954-1	TRIP BLANK_134	Total/NA	Water	8260D	
240-171954-2	MW-58_081922	Total/NA	Water	8260D	
240-171954-3	MW-48R_081922	Total/NA	Water	8260D	
240-171954-4	MW-67_081922	Total/NA	Water	8260D	
240-171954-5	DUP-04	Total/NA	Water	8260D	
MB 240-540306/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540306/5	Lab Control Sample	Total/NA	Water	8260D	
240-171925-F-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-171925-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171954-3	MW-48R_081922	Total/NA	Water	8260D SIM	
240-171954-4	MW-67_081922	Total/NA	Water	8260D SIM	
240-171954-5	DUP-04	Total/NA	Water	8260D SIM	
MB 240-540396/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540396/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171965-G-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171965-M-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 540607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171954-2	MW-58_081922	Total/NA	Water	8260D SIM	
MB 240-540607/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540607/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171967-G-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171967-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Client Sample ID: TRIP BLANK_134

Lab Sample ID: 240-171954-1
Date Collected: 08/19/22 00:00
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540306	TJL1	EET CAN	08/26/22 16:49

Client Sample ID: MW-58_081922

Lab Sample ID: 240-171954-2
Date Collected: 08/19/22 10:58
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540306	TJL1	EET CAN	08/26/22 17:11
Total/NA	Analysis	8260D SIM		1.2	540607	CS	EET CAN	08/30/22 02:00

Client Sample ID: MW-48R_081922

Lab Sample ID: 240-171954-3
Date Collected: 08/19/22 11:40
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540306	TJL1	EET CAN	08/26/22 17:33
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 05:07

Client Sample ID: MW-67_081922

Lab Sample ID: 240-171954-4
Date Collected: 08/19/22 13:55
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540306	TJL1	EET CAN	08/26/22 17:55
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 05:31

Client Sample ID: DUP-04

Lab Sample ID: 240-171954-5
Date Collected: 08/19/22 00:00
Matrix: Water
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540306	TJL1	EET CAN	08/26/22 18:17
Total/NA	Analysis	8260D SIM		1	540396	CS	EET CAN	08/27/22 05:55

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171954-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: SAMANTHA HINDLE	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_134	8/19/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-58_081922	8/19/22	1058		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-48R_081922	8/19/22	1140		X						6					N	G	X	X	X	X	X	X	X	
MW-67_081922	8/19/22	1355		X						6					N	G	X	X	X	X	X	X	X	
DUP-04	8/19/22	—		X						6					N	G	X	X	X	X	X	X	X	

240-171954 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	ARCADIS	8/19/22 1505	NOVI COLD STORAGE	ARCADIS	8/19/22 1505
[signature]	ARCADIS	8/22/22 1120	[signature]	Eurofins	8/22/22 1120
[signature]	Eurofins	8/22/22	Rachel Haacke	TESTAK	8/23/22 9:30

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9/7/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Acadis Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC~~[illegible]~~ 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 07, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171954-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-07
Initial Data Verification completed by CADENA: 2022-09-07
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171954-1

	Sample Name:	TRIP BLANK_134				MW-58_081922				MW-48R_081922				MW-67_081922				DUP-04			
	Lab Sample ID:	2401719541				2401719542				2401719543				2401719544				2401719545			
	Sample Date:	8/19/2022				8/19/2022				8/19/2022				8/19/2022				8/19/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.2	1.0	ug/l	---	3.2	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	67	1.0	ug/l	---	67	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					3.6	2.4	ug/l	---	12	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171967-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
9/7/2022 11:32:13 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Job ID: 240-171967-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171967-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171967-1	TRIP BLANK_107	Water	08/19/22 00:00	08/23/22 09:30
240-171967-2	MW-71_081922	Water	08/19/22 09:55	08/23/22 09:30
240-171967-3	MW-45_081922	Water	08/19/22 10:57	08/23/22 09:30
240-171967-4	MW-29_081922	Water	08/19/22 12:15	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Client Sample ID: TRIP BLANK_107 — Lab Sample ID: 240-171967-1

No Detections.

Client Sample ID: MW-71_081922 — Lab Sample ID: 240-171967-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.67	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-45_081922 — Lab Sample ID: 240-171967-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	90		10	4.6	ug/L	10		8260D	Total/NA
Vinyl chloride	290		10	4.5	ug/L	10		8260D	Total/NA

Client Sample ID: MW-29_081922 — Lab Sample ID: 240-171967-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	6.2		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.3		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Client Sample ID: TRIP BLANK_107
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171967-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 19:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 19:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 19:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/26/22 19:27*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/26/22 19:27*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*08/26/22 19:27*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/26/22 19:27*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Client Sample ID: MW-71_081922

Date Collected: 08/19/22 09:55
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171967-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 05:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*72*		*66 - 120*		*08/30/22 05:10*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 19:52	1
cis-1,2-Dichloroethene	**0.67**	**J**	1.0	0.46	ug/L			08/26/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/26/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*08/26/22 19:52*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/26/22 19:52*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Client Sample ID: MW-45_081922
Date Collected: 08/19/22 10:57
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171967-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 05:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/30/22 05:34*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 13:23	1
cis-1,2-Dichloroethene	**90**		10	4.6	ug/L			08/30/22 14:17	10
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 13:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 13:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 13:23	1
Vinyl chloride	**290**		10	4.5	ug/L			08/30/22 14:17	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*08/29/22 13:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/30/22 14:17*	*10*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/29/22 13:23*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/30/22 14:17*	*10*
Toluene-d8 (Surr)	*95*		*78 - 122*		*08/29/22 13:23*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/30/22 14:17*	*10*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/29/22 13:23*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 120*		*08/30/22 14:17*	*10*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Client Sample ID: MW-29_081922
Date Collected: 08/19/22 12:15
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171967-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**6.2**		2.0	0.86	ug/L			08/30/22 05:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*08/30/22 05:57*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 13:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 13:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 13:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 13:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 13:48	1
Vinyl chloride	**2.3**		1.0	0.45	ug/L			08/30/22 14:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*08/29/22 13:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*08/30/22 14:41*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/29/22 13:48*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/30/22 14:41*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/29/22 13:48*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/30/22 14:41*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/29/22 13:48*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/30/22 14:41*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171965-H-5 MS	Matrix Spike	91	107	102	102
240-171965-N-5 MSD	Matrix Spike Duplicate	88	105	101	98
240-171967-1	TRIP BLANK_107	93	97	96	101
240-171967-2	MW-71_081922	91	95	95	99
240-171967-3	MW-45_081922	93	86	95	96
240-171967-3	MW-45_081922	100	92	99	102
240-171967-4	MW-29_081922	91	85	93	95
240-171967-4	MW-29_081922	98	89	98	101
240-171967-4 MS	MW-29-MS_081922	91	86	94	96
240-171967-4 MS	MW-29-MS_081922	95	91	100	99
240-171967-4 MSD	MW-29-MSD_081922	91	87	95	96
240-171967-4 MSD	MW-29-MSD_081922	97	92	98	99
LCS 240-540299/5	Lab Control Sample	88	104	99	98
LCS 240-540494/5	Lab Control Sample	92	90	95	96
LCS 240-540665/5	Lab Control Sample	95	94	100	100
MB 240-540299/8	Method Blank	90	97	97	99
MB 240-540494/9	Method Blank	96	89	94	98
MB 240-540665/8	Method Blank	99	88	97	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171967-2	MW-71_081922	72
240-171967-3	MW-45_081922	77
240-171967-4	MW-29_081922	77
240-171967-4 MS	MW-29-MS_081922	76
240-171967-4 MSD	MW-29-MSD_081922	77
LCS 240-540607/4	Lab Control Sample	77
MB 240-540607/5	Method Blank	69

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540299/8
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/26/22 11:48	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/26/22 11:48	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/26/22 11:48	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/26/22 11:48	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/26/22 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*08/26/22 11:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*08/26/22 11:48*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/26/22 11:48*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*08/26/22 11:48*	*1*

Lab Sample ID: LCS 240-540299/5
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.6		ug/L		93	63 - 134
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	77 - 123
Tetrachloroethene	20.0	20.3		ug/L		102	76 - 123
trans-1,2-Dichloroethene	20.0	19.1		ug/L		95	75 - 124
Trichloroethene	20.0	19.2		ug/L		96	70 - 122
Vinyl chloride	20.0	20.9		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*104*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-171965-H-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	16.9		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	20.0	18.9		ug/L		94	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		90	56 - 136
Trichloroethene	1.0	U	20.0	17.8		ug/L		89	61 - 124
Vinyl chloride	1.0	U	20.0	19.5		ug/L		97	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171965-H-5 MS
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	102		73 - 120

Lab Sample ID: 240-171965-N-5 MSD
Matrix: Water
Analysis Batch: 540299

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	19.9		ug/L		100	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.4		ug/L		92	56 - 136	3	15
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	61 - 124	4	15
Vinyl chloride	1.0	U	20.0	20.7		ug/L		103	43 - 157	6	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		62 - 137
4-Bromofluorobenzene (Surr)	105		56 - 136
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	98		73 - 120

Lab Sample ID: MB 240-540494/9
Matrix: Water
Analysis Batch: 540494

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 12:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 12:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 12:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 12:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 12:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 12:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		62 - 137		08/29/22 12:59	1
4-Bromofluorobenzene (Surr)	89		56 - 136		08/29/22 12:59	1
Toluene-d8 (Surr)	94		78 - 122		08/29/22 12:59	1
Dibromofluoromethane (Surr)	98		73 - 120		08/29/22 12:59	1

Lab Sample ID: LCS 240-540494/5
Matrix: Water
Analysis Batch: 540494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.8		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	19.5		ug/L		98	77 - 123
Tetrachloroethene	20.0	17.2		ug/L		86	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-540494/5
Matrix: Water
Analysis Batch: 540494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	18.7		ug/L		94	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171967-4 MS
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-29-MS_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	19.1		ug/L		95	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	66 - 128		
Tetrachloroethene	1.0	U	20.0	16.3		ug/L		82	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	17.9		ug/L		89	56 - 136		
Trichloroethene	1.0	U	20.0	17.6		ug/L		88	61 - 124		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171967-4 MSD
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-29-MSD_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	20.0		ug/L		100	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	66 - 128	7	14
Tetrachloroethene	1.0	U	20.0	17.5		ug/L		88	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		95	56 - 136	6	15
Trichloroethene	1.0	U	20.0	18.9		ug/L		95	61 - 124	7	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: MB 240-540665/8
Matrix: Water
Analysis Batch: 540665

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/30/22 13:52	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-540665/8
Matrix: Water
Analysis Batch: 540665

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/30/22 13:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/30/22 13:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/30/22 13:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/30/22 13:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/30/22 13:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*08/30/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/30/22 13:52*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/30/22 13:52*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/30/22 13:52*	*1*

Lab Sample ID: LCS 240-540665/5
Matrix: Water
Analysis Batch: 540665

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	22.6		ug/L		113	63 - 134
cis-1,2-Dichloroethene	20.0	22.2		ug/L		111	77 - 123
Tetrachloroethene	20.0	19.5		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	21.5		ug/L		108	75 - 124
Trichloroethene	20.0	21.4		ug/L		107	70 - 122
Vinyl chloride	20.0	20.9		ug/L		104	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*100*		*73 - 120*

Lab Sample ID: 240-171967-4 MS
Matrix: Water
Analysis Batch: 540665

Client Sample ID: MW-29-MS_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	2.3		20.0	21.0		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171967-4 MSD
Matrix: Water
Analysis Batch: 540665

Client Sample ID: MW-29-MSD_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Vinyl chloride	2.3		20.0	22.2		ug/L		100	43 - 157	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	97		*62 - 137*
4-Bromofluorobenzene (Surr)	92		*56 - 136*
Toluene-d8 (Surr)	98		*78 - 122*
Dibromofluoromethane (Surr)	99		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540607/5
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/29/22 23:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	69		*66 - 120*		*08/29/22 23:13*	*1*

Lab Sample ID: LCS 240-540607/4
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.94		ug/L		99	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	77		*66 - 120*

Lab Sample ID: 240-171967-4 MS
Matrix: Water
Analysis Batch: 540607

Client Sample ID: MW-29-MS_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	6.2		10.0	16.5		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	76		*66 - 120*

Lab Sample ID: 240-171967-4 MSD
Matrix: Water
Analysis Batch: 540607

Client Sample ID: MW-29-MSD_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	6.2		10.0	16.3		ug/L		101	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171967-4 MSD
Matrix: Water
Analysis Batch: 540607

Client Sample ID: MW-29-MSD_081922
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

GC/MS VOA

Analysis Batch: 540299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171967-1	TRIP BLANK_107	Total/NA	Water	8260D	
240-171967-2	MW-71_081922	Total/NA	Water	8260D	
MB 240-540299/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540299/5	Lab Control Sample	Total/NA	Water	8260D	
240-171965-H-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-171965-N-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 540494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171967-3	MW-45_081922	Total/NA	Water	8260D	
240-171967-4	MW-29_081922	Total/NA	Water	8260D	
MB 240-540494/9	Method Blank	Total/NA	Water	8260D	
LCS 240-540494/5	Lab Control Sample	Total/NA	Water	8260D	
240-171967-4 MS	MW-29-MS_081922	Total/NA	Water	8260D	
240-171967-4 MSD	MW-29-MSD_081922	Total/NA	Water	8260D	

Analysis Batch: 540607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171967-2	MW-71_081922	Total/NA	Water	8260D SIM	
240-171967-3	MW-45_081922	Total/NA	Water	8260D SIM	
240-171967-4	MW-29_081922	Total/NA	Water	8260D SIM	
MB 240-540607/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540607/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171967-4 MS	MW-29-MS_081922	Total/NA	Water	8260D SIM	
240-171967-4 MSD	MW-29-MSD_081922	Total/NA	Water	8260D SIM	

Analysis Batch: 540665

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171967-3	MW-45_081922	Total/NA	Water	8260D	
240-171967-4	MW-29_081922	Total/NA	Water	8260D	
MB 240-540665/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540665/5	Lab Control Sample	Total/NA	Water	8260D	
240-171967-4 MS	MW-29-MS_081922	Total/NA	Water	8260D	
240-171967-4 MSD	MW-29-MSD_081922	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Client Sample ID: TRIP BLANK_107

Lab Sample ID: 240-171967-1
Matrix: Water
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 19:27

Client Sample ID: MW-71_081922

Lab Sample ID: 240-171967-2
Matrix: Water
Date Collected: 08/19/22 09:55
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540299	LEE	EET CAN	08/26/22 19:52
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 05:10

Client Sample ID: MW-45_081922

Lab Sample ID: 240-171967-3
Matrix: Water
Date Collected: 08/19/22 10:57
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 13:23
Total/NA	Analysis	8260D		10	540665	AJS	EET CAN	08/30/22 14:17
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 05:34

Client Sample ID: MW-29_081922

Lab Sample ID: 240-171967-4
Matrix: Water
Date Collected: 08/19/22 12:15
Date Received: 08/23/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 13:48
Total/NA	Analysis	8260D		1	540665	AJS	EET CAN	08/30/22 14:41
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 05:57

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171967-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	08-31-22
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

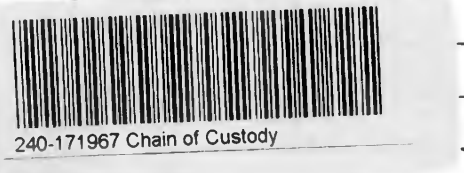
TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_107	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-71_081922	8/19/22	0955		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-45_081922	8/19/22	1057		X						6					N	G	X	X	X	X	X	X	X	
MW-29_081922	8/19/22	1215		X						6					N	G	X	X	X	X	X	X	X	
MW-29-MS_081922	8/19/22	1215		X						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-29-MSD_081922	8/19/22	1215		X						6					N	G	X	X	X	X	X	X	X	Run MS/MSD



Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ [illegible] ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For [ ] Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

SG

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	8/19/22 1530	Novi Cold Storage	Arcadis	8/19/22 1530
[signature]	ARCADIS	8/22/22 1120	[signature]	Eurofins	8/22/22 1120
[signature]	Eurofins	8/22/22	[signature]	ET NC	8.23.22 9:30

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9/7/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hardel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22 (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC~~99090~~ 286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____
_____
_____
_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	4.1	4.1	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	3.9	3.9	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.7	2.7	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

September 07, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171967-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-07
Initial Data Verification completed by CADENA: 2022-09-07
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171967-1

	Sample Name:	TRIP BLANK_107				MW-71_081922				MW-45_081922				MW-29_081922			
	Lab Sample ID:	2401719671				2401719672				2401719673				2401719674			
	Sample Date:	8/19/2022				8/19/2022				8/19/2022				8/19/2022			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.67	1.0	ug/l	J	90	10	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	290	10	ug/l	---	2.3	1.0	ug/l	---
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	6.2	2.0	ug/l	---

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-171971-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
9/7/2022 11:32:41 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Job ID: 240-171971-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-171971-1

Comments
No additional comments.

Receipt
The samples were received on 8/23/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.7º C, 3.9º C, 3.9º C and 4.1º C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No additionalanalytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-171971-1	TRIP BLANK_95	Water	08/19/22 00:00	08/23/22 09:30
240-171971-2	MW-24_081922	Water	08/19/22 10:05	08/23/22 09:30
240-171971-3	MW-36_081922	Water	08/19/22 11:05	08/23/22 09:30
240-171971-4	MW-62_081922	Water	08/19/22 12:20	08/23/22 09:30

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Client Sample ID: TRIP BLANK_95 — Lab Sample ID: 240-171971-1

No Detections.

Client Sample ID: MW-24_081922 — Lab Sample ID: 240-171971-2

No Detections.

Client Sample ID: MW-36_081922 — Lab Sample ID: 240-171971-3

No Detections.

Client Sample ID: MW-62_081922 — Lab Sample ID: 240-171971-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.8		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.3		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Client Sample ID: TRIP BLANK_95

Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-1

Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 15:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 15:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 15:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 15:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 15:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*08/29/22 15:01*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/29/22 15:01*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/29/22 15:01*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*08/29/22 15:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Client Sample ID: MW-24_081922

Date Collected: 08/19/22 10:05
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-2

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/30/22 07:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*08/30/22 07:09*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 15:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 15:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 15:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 15:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 15:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/29/22 15:26*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*08/29/22 15:26*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/29/22 15:26*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/29/22 15:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Client Sample ID: MW-36_081922

Date Collected: 08/19/22 11:05
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-3

Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/31/22 23:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*73*		*66 - 120*		*08/31/22 23:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 15:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 15:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 15:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 15:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 15:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 15:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*08/29/22 15:50*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*08/29/22 15:50*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*08/29/22 15:50*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*08/29/22 15:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Client Sample ID: MW-62_081922
Date Collected: 08/19/22 12:20
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**2.8**		2.0	0.86	ug/L			08/30/22 07:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*08/30/22 07:33*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 17:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 17:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 17:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 17:04	1
Vinyl chloride	**1.3**		1.0	0.45	ug/L			08/29/22 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*08/29/22 17:04*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/29/22 17:04*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/29/22 17:04*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*08/29/22 17:04*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-171971-1	TRIP BLANK_95	94	85	93	95
240-171971-2	MW-24_081922	96	87	93	96
240-171971-3	MW-36_081922	92	85	93	94
240-171971-3 MS	MW-36-MS_081922	92	86	93	96
240-171971-3 MSD	MW-36-MSD_081922	94	89	94	97
240-171971-4	MW-62_081922	95	86	97	96
LCS 240-540494/5	Lab Control Sample	92	90	95	96
MB 240-540494/9	Method Blank	96	89	94	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-171967-G-4 MS	Matrix Spike	76
240-171967-M-4 MSD	Matrix Spike Duplicate	77
240-171971-2	MW-24_081922	76
240-171971-3	MW-36_081922	73
240-171971-3 MS	MW-36-MS_081922	76
240-171971-3 MSD	MW-36-MSD_081922	79
240-171971-4	MW-62_081922	80
LCS 240-540607/4	Lab Control Sample	77
LCS 240-540955/4	Lab Control Sample	78
MB 240-540607/5	Method Blank	69
MB 240-540955/5	Method Blank	70

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540494/9
Matrix: Water
Analysis Batch: 540494

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/29/22 12:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/29/22 12:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 12:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/29/22 12:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/29/22 12:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/29/22 12:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/29/22 12:59*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*08/29/22 12:59*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/29/22 12:59*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*08/29/22 12:59*	*1*

Lab Sample ID: LCS 240-540494/5
Matrix: Water
Analysis Batch: 540494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.8		ug/L		99	63 - 134
cis-1,2-Dichloroethene	20.0	19.5		ug/L		98	77 - 123
Tetrachloroethene	20.0	17.2		ug/L		86	76 - 123
trans-1,2-Dichloroethene	20.0	19.4		ug/L		97	75 - 124
Trichloroethene	20.0	19.0		ug/L		95	70 - 122
Vinyl chloride	20.0	18.7		ug/L		94	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-171971-3 MS
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-36-MS_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	20.5		ug/L		103	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	19.9		ug/L		99	66 - 128
Tetrachloroethene	1.0	U	20.0	17.7		ug/L		89	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	19.5		ug/L		97	56 - 136
Trichloroethene	1.0	U	20.0	19.3		ug/L		96	61 - 124
Vinyl chloride	1.0	U	20.0	18.6		ug/L		93	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*
Toluene-d8 (Surr)	*93*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-171971-3 MS
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-36-MS_081922
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-171971-3 MSD
Matrix: Water
Analysis Batch: 540494

Client Sample ID: MW-36-MSD_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	19.6		ug/L		98	56 - 135	5	26
cis-1,2-Dichloroethene	1.0	U	20.0	18.9		ug/L		95	66 - 128	5	14
Tetrachloroethene	1.0	U	20.0	16.6		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.7		ug/L		93	56 - 136	4	15
Trichloroethene	1.0	U	20.0	18.1		ug/L		90	61 - 124	6	15
Vinyl chloride	1.0	U	20.0	17.7		ug/L		88	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		62 - 137
4-Bromofluorobenzene (Surr)	89		56 - 136
Toluene-d8 (Surr)	94		78 - 122
Dibromofluoromethane (Surr)	97		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-540607/5
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/29/22 23:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	69		66 - 120		08/29/22 23:13	1

Lab Sample ID: LCS 240-540607/4
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.94		ug/L		99	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	77		66 - 120

Lab Sample ID: 240-171967-G-4 MS
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	6.2		10.0	16.5		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-171967-M-4 MSD
Matrix: Water
Analysis Batch: 540607

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	6.2		10.0	16.3		ug/L		101	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: MB 240-540955/5
Matrix: Water
Analysis Batch: 540955

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			08/31/22 22:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*70*		*66 - 120*		*08/31/22 22:13*	*1*

Lab Sample ID: LCS 240-540955/4
Matrix: Water
Analysis Batch: 540955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	10.3		ug/L		103	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-171971-3 MS
Matrix: Water
Analysis Batch: 540955

Client Sample ID: MW-36-MS_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.45		ug/L		95	51 - 153

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-171971-3 MSD
Matrix: Water
Analysis Batch: 540955

Client Sample ID: MW-36-MSD_081922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	51 - 153	7	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-171971-3 MSD
Matrix: Water
Analysis Batch: 540955

Client Sample ID: MW-36-MSD_081922
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

GC/MS VOA

Analysis Batch: 540494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171971-1	TRIP BLANK_95	Total/NA	Water	8260D	
240-171971-2	MW-24_081922	Total/NA	Water	8260D	
240-171971-3	MW-36_081922	Total/NA	Water	8260D	
240-171971-4	MW-62_081922	Total/NA	Water	8260D	
MB 240-540494/9	Method Blank	Total/NA	Water	8260D	
LCS 240-540494/5	Lab Control Sample	Total/NA	Water	8260D	
240-171971-3 MS	MW-36-MS_081922	Total/NA	Water	8260D	
240-171971-3 MSD	MW-36-MSD_081922	Total/NA	Water	8260D	

Analysis Batch: 540607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171971-2	MW-24_081922	Total/NA	Water	8260D SIM	
240-171971-4	MW-62_081922	Total/NA	Water	8260D SIM	
MB 240-540607/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540607/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171967-G-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-171967-M-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 540955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-171971-3	MW-36_081922	Total/NA	Water	8260D SIM	
MB 240-540955/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-540955/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-171971-3 MS	MW-36-MS_081922	Total/NA	Water	8260D SIM	
240-171971-3 MSD	MW-36-MSD_081922	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Client Sample ID: TRIP BLANK_95
Date Collected: 08/19/22 00:00
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 15:01

Client Sample ID: MW-24_081922
Date Collected: 08/19/22 10:05
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 15:26
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 07:09

Client Sample ID: MW-36_081922
Date Collected: 08/19/22 11:05
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 15:50
Total/NA	Analysis	8260D SIM		1	540955	CS	EET CAN	08/31/22 23:24

Client Sample ID: MW-62_081922
Date Collected: 08/19/22 12:20
Date Received: 08/23/22 09:30

Lab Sample ID: 240-171971-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540494	HMB	EET CAN	08/29/22 17:04
Total/NA	Analysis	8260D SIM		1	540607	CS	EET CAN	08/30/22 07:33

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-171971-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 120

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 269-832-7478	Telephone: 248-994-2329	Telephone: 330-966-9783	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Email: Kristoffer.Hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Gurrola	TAT if different from below: ☐ 3 weeks ☐ 10 day ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30080642.401.03				
PO # 30080642.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 95	—	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-24_081922	8/19/22	1005		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-36_081922		1105		X						6					N	G	X	X	X	X	X	X	X	
MW-36-MS_081922		1105		X						6					N	G	X	X	X	X	X	X	X	
MW-36-MSD_081922		1105		X						6					N	G	X	X	X	X	X	X	X	
MW-62_081922	—	1220		X						6					N	G	X	X	X	X	X	X	X	—

240-171971 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison

(A fee may be assessed if samples are retained longer than 1 month)
☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/19/22 1300	Novi Cold Storage	Arcadis	8/19/22 1300
[signature]	ARCADIS	8/22/22 1120	[signature]	Eurofins	8/22/22 1120
[signature]	Eurofins	8/22/22	[signature]	TEETNC	8/23/22 0830

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9/7/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Rachelle Hardel

Cooler Received on 8-23-22 Opened on 8-23-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF 0.0 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	Yes	No (NA)
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated? JH 8-30-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC[illegible]
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

286797

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : _____

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 IR-15	3.9	3.9	Wet Ice Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 IR-15	4.1	4.1	Wet Ice Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 IR-15	3.9	3.9	Wet Ice Blue Ice Dry Ice Water None
(4) TA Client Box Other	IR-13 IR-15	2.7	2.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

September 07, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 171971-1
Sample date: 2022-08-19
Report received by CADENA: 2022-09-07
Initial Data Verification completed by CADENA: 2022-09-07
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 171971-1

	Sample Name:	TRIP BLANK_95				MW-24_081922				MW-36_081922				MW-62_081922			
	Lab Sample ID:	2401719711				2401719712				2401719713				2401719714			
	Sample Date:	8/19/2022				8/19/2022				8/19/2022				8/19/2022			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.3	1.0	ug/l	---
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	2.8	2.0	ug/l	---

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-172279-1
Client Project/Site: Ford LTP - On Site

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Kristoffer Hinskey

Authorized for release by:
9/14/2022 10:33:48 AM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Job ID: 240-172279-1
Project/Site: Ford LTP - On Site

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-172279-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-172279-1

Comments
No additional comments.

Receipt
The samples were received on 8/30/2022 10:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.4º C.

GC/MS VOA
Method 8260D SIM: The matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 240-541497 was not reportable due to 1,4-dioxane concentration over the calibration limit in the parent sample.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No additrional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-172279-1
Project/Site: Ford LTP - On Site

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-172279-1	TRIP BLANK_90	Water	08/27/22 00:00	08/30/22 10:15
240-172279-2	MW-212S_082722	Water	08/27/22 09:56	08/30/22 10:15
240-172279-3	MW-213S_082722	Water	08/27/22 11:21	08/30/22 10:15
240-172279-4	MW-42_082722	Water	08/27/22 12:21	08/30/22 10:15

Detection Summary

Client: ARCADIS U.S., Inc.
Job ID: 240-172279-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_90 — Lab Sample ID: 240-172279-1

No Detections.

Client Sample ID: MW-212S_082722 — Lab Sample ID: 240-172279-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.6		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-213S_082722 — Lab Sample ID: 240-172279-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.65	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.80	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-42_082722 — Lab Sample ID: 240-172279-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.70	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

Client Sample ID: TRIP BLANK_90
Date Collected: 08/27/22 00:00
Date Received: 08/30/22 10:15

Lab Sample ID: 240-172279-1
Matrix: Water

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/31/22 20:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/31/22 20:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 20:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/31/22 20:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 20:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/31/22 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/31/22 20:15*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*08/31/22 20:15*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/31/22 20:15*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*08/31/22 20:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

Client Sample ID: MW-212S_082722
Date Collected: 08/27/22 09:56
Date Received: 08/30/22 10:15

Lab Sample ID: 240-172279-2
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/07/22 04:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 120*		*09/07/22 04:37*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/31/22 20:39	1
cis-1,2-Dichloroethene	**2.6**		1.0	0.46	ug/L			08/31/22 20:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 20:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/31/22 20:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 20:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/31/22 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/31/22 20:39*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*08/31/22 20:39*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*08/31/22 20:39*	*1*
Dibromofluoromethane (Surr)	*105*		*73 - 120*		*08/31/22 20:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

Client Sample ID: MW-213S_082722
Date Collected: 08/27/22 11:21
Date Received: 08/30/22 10:15

Lab Sample ID: 240-172279-3
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/07/22 05:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*66 - 120*		*09/07/22 05:02*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/31/22 21:04	1
cis-1,2-Dichloroethene	**0.65**	**J**	1.0	0.46	ug/L			08/31/22 21:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 21:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/31/22 21:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 21:04	1
Vinyl chloride	**0.80**	**J**	1.0	0.45	ug/L			08/31/22 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*08/31/22 21:04*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/31/22 21:04*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*08/31/22 21:04*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*08/31/22 21:04*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

Client Sample ID: MW-42_082722
Date Collected: 08/27/22 12:21
Date Received: 08/30/22 10:15

Lab Sample ID: 240-172279-4
Matrix: Water

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/07/22 05:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*		*09/07/22 05:27*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/31/22 21:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/31/22 21:28	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 21:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/31/22 21:28	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 21:28	1
Vinyl chloride	**0.70**	**J**	1.0	0.45	ug/L			08/31/22 21:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*08/31/22 21:28*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*08/31/22 21:28*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*08/31/22 21:28*	*1*
Dibromofluoromethane (Surr)	*104*		*73 - 120*		*08/31/22 21:28*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-172240-B-1 MS	Matrix Spike	97	92	102	101
240-172240-B-1 MSD	Matrix Spike Duplicate	101	96	102	104
240-172279-1	TRIP BLANK_90	100	88	97	101
240-172279-2	MW-212S_082722	103	92	99	105
240-172279-3	MW-213S_082722	100	91	98	103
240-172279-4	MW-42_082722	103	91	97	104
LCS 240-540865/5	Lab Control Sample	94	92	97	97
MB 240-540865/8	Method Blank	96	86	94	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-172279-2	MW-212S_082722	92
240-172279-3	MW-213S_082722	88
240-172279-4	MW-42_082722	90
LCS 240-541497/3	Lab Control Sample	90
MB 240-541497/4	Method Blank	94

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-540865/8
Matrix: Water
Analysis Batch: 540865

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			08/31/22 13:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			08/31/22 13:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 13:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			08/31/22 13:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			08/31/22 13:18	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			08/31/22 13:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*08/31/22 13:18*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*08/31/22 13:18*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*08/31/22 13:18*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*08/31/22 13:18*	*1*

Lab Sample ID: LCS 240-540865/5
Matrix: Water
Analysis Batch: 540865

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.8		ug/L		109	63 - 134
cis-1,2-Dichloroethene	20.0	21.2		ug/L		106	77 - 123
Tetrachloroethene	20.0	19.2		ug/L		96	76 - 123
trans-1,2-Dichloroethene	20.0	21.1		ug/L		106	75 - 124
Trichloroethene	20.0	20.7		ug/L		104	70 - 122
Vinyl chloride	20.0	19.6		ug/L		98	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-172240-B-1 MS
Matrix: Water
Analysis Batch: 540865

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1000	U	20000	18800		ug/L		94	56 - 135
cis-1,2-Dichloroethene	49000		20000	68600	E	ug/L		98	66 - 128
Tetrachloroethene	1000	U	20000	14900		ug/L		75	62 - 131
trans-1,2-Dichloroethene	1000	U	20000	17800		ug/L		89	56 - 136
Trichloroethene	1000	U	20000	16900		ug/L		84	61 - 124
Vinyl chloride	1000	U	20000	17200		ug/L		86	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-172240-B-1 MS
Matrix: Water
Analysis Batch: 540865

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-172240-B-1 MSD
Matrix: Water
Analysis Batch: 540865

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1000	U	20000	21000		ug/L		105	56 - 135	11	26
cis-1,2-Dichloroethene	49000		20000	72800	E	ug/L		119	66 - 128	6	14
Tetrachloroethene	1000	U	20000	16600		ug/L		83	62 - 131	11	20
trans-1,2-Dichloroethene	1000	U	20000	20400		ug/L		102	56 - 136	13	15
Trichloroethene	1000	U	20000	19200		ug/L		96	61 - 124	13	15
Vinyl chloride	1000	U	20000	19300		ug/L		97	43 - 157	12	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*102*		*78 - 122*
Dibromofluoromethane (Surr)	*104*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-541497/4
Matrix: Water
Analysis Batch: 541497

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			09/06/22 22:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*94*		*66 - 120*		*09/06/22 22:43*	*1*

Lab Sample ID: LCS 240-541497/3
Matrix: Water
Analysis Batch: 541497

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	11.0		ug/L		110	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*90*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

GC/MS VOA

Analysis Batch: 540865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-172279-1	TRIP BLANK_90	Total/NA	Water	8260D	
240-172279-2	MW-212S_082722	Total/NA	Water	8260D	
240-172279-3	MW-213S_082722	Total/NA	Water	8260D	
240-172279-4	MW-42_082722	Total/NA	Water	8260D	
MB 240-540865/8	Method Blank	Total/NA	Water	8260D	
LCS 240-540865/5	Lab Control Sample	Total/NA	Water	8260D	
240-172240-B-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-172240-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 541497

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-172279-2	MW-212S_082722	Total/NA	Water	8260D SIM	
240-172279-3	MW-213S_082722	Total/NA	Water	8260D SIM	
240-172279-4	MW-42_082722	Total/NA	Water	8260D SIM	
MB 240-541497/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-541497/3	Lab Control Sample	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 240-172279-1
Project/Site: Ford LTP - On Site

Client Sample ID: TRIP BLANK_90
Lab Sample ID: 240-172279-1
Date Collected: 08/27/22 00:00
Matrix: Water
Date Received: 08/30/22 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540865	HMB	EET CAN	08/31/22 20:15

Client Sample ID: MW-212S_082722
Lab Sample ID: 240-172279-2
Date Collected: 08/27/22 09:56
Matrix: Water
Date Received: 08/30/22 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540865	HMB	EET CAN	08/31/22 20:39
Total/NA	Analysis	8260D SIM		1	541497	CS	EET CAN	09/07/22 04:37

Client Sample ID: MW-213S_082722
Lab Sample ID: 240-172279-3
Date Collected: 08/27/22 11:21
Matrix: Water
Date Received: 08/30/22 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540865	HMB	EET CAN	08/31/22 21:04
Total/NA	Analysis	8260D SIM		1	541497	CS	EET CAN	09/07/22 05:02

Client Sample ID: MW-42_082722
Lab Sample ID: 240-172279-4
Date Collected: 08/27/22 12:21
Matrix: Water
Date Received: 08/30/22 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	540865	HMB	EET CAN	08/31/22 21:28
Total/NA	Analysis	8260D SIM		1	541497	CS	EET CAN	09/07/22 05:27

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-172279-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

2.4/2.4

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact	Lab Contact	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	1 of 1 COCs
Address: 28550 Cabot Drive, Suite 500	Client Project Manager: Kris Hinskey	Telephone: 248-994-2329	Telephone: 330-966-9783	
City/State/Zip: Novi, MI, 48377	Telephone: 269-832-7478			
Phone: 248-994-2240	Email: Kristoffer.Hinskey@arcadis.com			
Project Name: Ford LTP On-Site	Sampler Name: Gary Schafer			
Project Number: 30080642.401.03	Method of Shipment/Carrier:			
PO # 30080642.401.03	Shipping/Tracking No:			

Analysis Turnaround Time

TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

10 day

For lab use only: Walk-in client; Lab sampling; Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260D	cis-1,2-DCE 8260D	Trans-1,2-DCE 8260D	PCE 8260D	TCE 8260D	Vinyl Chloride 8260D	1,4-Dioxane 8260D SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 90	8/27/22	—		X						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2125_082722	8/27/22	0956		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260D 3 VOAs for 8260D SIM
MW-2135_082722	8/27/22	1121		X						6					N	G	X	X	X	X	X	X	X	
MW-42_082722	8/27/22	12:21		X						6					N	G	X	X	X	X	X	X	X	

240-172279 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/29/22 10:15	Novi cold storage	Arcadis	8/29/22 1015
[signature]	ARCADIS	8/29/22 1245	[signature]	EETM	8/29/22 1245
Jeri Hall	EETM	8/29/22 1310	Received in Laboratory by: [signature]	EETMC	8.30.22 1015

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9/14/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Danny Boyer

Cooler Received on 8.30.22 Opened on 8.30.22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 2.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

eurofins
RT 164 6 10:30 A
08.30
FZ
Part# 569969-434 MTN Exp 04/23
ORIGIN ID:DEOA (810) 229-2763
SHIPPING DEPARTMENT
EUROFINS TESTAMERICA
10448 CITATION DRIVE
SUITE 200
BRIGHTON, MI 48116
UNITED STATES US
SHIP DATE: 29AUG22
ACTWGT: 47.40 LB
CAD: 0183192/CAFE3616
BILL RECIPIENT
TO ATTN: SAMPLE RECEIVING
EUROFINS BARBERTON OH
180 S. VAN BUREN AVE.
BARBERTON OH 44203
REF:
INV:
PO:
DEPT:
FedEx
Express
TUE - 30 AUG 10:30A
TRK# 0201 4506 9520 3772
PRIORITY OVERNIGHT
64 CAKA
44203
OH-US CLE

DATA VERIFICATION REPORT

September 14, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30080642.401.03_WA04- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 172279-1
Sample date: 2022-08-27
Report received by CADENA: 2022-09-14
Initial Data Verification completed by CADENA: 2022-09-14
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 172279-1

		Sample Name:	TRIP BLANK_90				MW-212S_082722				MW-213S_082722				MW-42_082722			
		Lab Sample ID:	2401722791				2401722792				2401722793				2401722794			
		Sample Date:	8/27/2022				8/27/2022				8/27/2022				8/27/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	2.6	1.0	ug/l	---	0.65	1.0	ug/l	J	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.80	1.0	ug/l	J	0.70	1.0	ug/l	J
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi Michigan 48377

Generated 11/16/2022 3:04:30 PM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-175774-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH44203

myEOL

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-175774-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-175774-1

Receipt
The samples were received on 11/3/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8°C and 1.3°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-175774-1	TRIP BLANK_45	Water	11/02/22 00:00	11/03/22 09:45
240-175774-2	MW-51_110222	Water	11/02/22 09:05	11/03/22 09:45
240-175774-3	MW-19_110222	Water	11/02/22 09:55	11/03/22 09:45
240-175774-4	MW-69_110222	Water	11/02/22 11:00	11/03/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Client Sample ID: TRIP BLANK_45 — Lab Sample ID: 240-175774-1

No Detections.

Client Sample ID: MW-51_110222 — Lab Sample ID: 240-175774-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	4.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.75	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-19_110222 — Lab Sample ID: 240-175774-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	240		6.0	2.6	ug/L	3		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.97	J	1.0	0.46	ug/L	1		8260D	Total/NA
Trichloroethene	0.89	J	1.0	0.44	ug/L	1		8260D	Total/NA
Vinyl chloride	0.89	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-69_110222 — Lab Sample ID: 240-175774-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	17		2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Client Sample ID: TRIP BLANK_45

Date Collected: 11/02/22 00:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175774-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 16:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 16:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 16:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 16:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/14/22 16:24*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/14/22 16:24*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/14/22 16:24*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/14/22 16:24*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Client Sample ID: MW-51_110222
Date Collected: 11/02/22 09:05
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175774-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**4.0**		2.0	0.86	ug/L			11/11/22 21:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/11/22 21:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 18:05	1
cis-1,2-Dichloroethene	**0.75**	**J**	1.0	0.46	ug/L			11/14/22 18:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 18:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 18:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 18:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 18:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/14/22 18:05*	*1*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/14/22 18:05*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/14/22 18:05*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/14/22 18:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Client Sample ID: MW-19_110222

Date Collected: 11/02/22 09:55
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175774-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**240**		6.0	2.6	ug/L			11/13/22 06:43	3

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 120*		*11/13/22 06:43*	*3*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 18:30	1
cis-1,2-Dichloroethene	**0.97**	**J**	1.0	0.46	ug/L			11/14/22 18:30	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 18:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 18:30	1
Trichloroethene	**0.89**	**J**	1.0	0.44	ug/L			11/14/22 18:30	1
Vinyl chloride	**0.89**	**J**	1.0	0.45	ug/L			11/14/22 18:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/14/22 18:30*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/14/22 18:30*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 18:30*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 18:30*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Client Sample ID: MW-69_110222
Date Collected: 11/02/22 11:00
Date Received: 11/03/22 09:45

Lab Sample ID: 240-175774-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	17		2.0	0.86	ug/L			11/11/22 22:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*		*11/11/22 22:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 18:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 18:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 18:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 18:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 18:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/14/22 18:55*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/14/22 18:55*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 18:55*	*1*
Dibromofluoromethane (Surr)	*98*		*73 - 120*		*11/14/22 18:55*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-175774-1	TRIP BLANK_45	96	79	92	95
240-175774-2	MW-51_110222	103	80	94	101
240-175774-3	MW-19_110222	100	81	93	98
240-175774-4	MW-69_110222	96	78	93	98
240-175886-L-3 MS	Matrix Spike	93	98	98	96
240-175886-N-3 MSD	Matrix Spike Duplicate	92	96	96	95
LCS 240-551823/5	Lab Control Sample	86	93	98	94
MB 240-551823/8	Method Blank	95	81	93	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-175774-2	MW-51_110222	108
240-175774-3	MW-19_110222	110
240-175774-4	MW-69_110222	108
240-175783-J-3 MS	Matrix Spike	106
240-175783-N-3 MSD	Matrix Spike Duplicate	106
240-175891-G-8 MS	Matrix Spike	106
240-175891-O-8 MSD	Matrix Spike Duplicate	112
LCS 240-551642/3	Lab Control Sample	119
LCS 240-551689/3	Lab Control Sample	119
MB 240-551642/4	Method Blank	111
MB 240-551689/4	Method Blank	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-551823/8
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/14/22 15:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/14/22 15:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/14/22 15:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/14/22 15:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/14/22 15:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/14/22 15:59*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/14/22 15:59*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/14/22 15:59*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/14/22 15:59*	*1*

Lab Sample ID: LCS 240-551823/5
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.7		ug/L		119	63 - 134
cis-1,2-Dichloroethene	25.0	26.5		ug/L		106	77 - 123
Tetrachloroethene	25.0	24.2		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	26.8		ug/L		107	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	12.5	12.5		ug/L		100	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-175886-L-3 MS
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	27.1		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	25.2		ug/L		101	66 - 128
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	24.5		ug/L		98	56 - 136
Trichloroethene	1.0	U	25.0	22.1		ug/L		89	61 - 124
Vinyl chloride	1.0	U	12.5	10.0		ug/L		80	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-175886-L-3 MS
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-175886-N-3 MSD
Matrix: Water
Analysis Batch: 551823

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	0	26
cis-1,2-Dichloroethene	1.0	U	25.0	24.3		ug/L		97	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		88	62 - 131	5	20
trans-1,2-Dichloroethene	1.0	U	25.0	23.6		ug/L		94	56 - 136	4	15
Trichloroethene	1.0	U	25.0	21.1		ug/L		85	61 - 124	5	15
Vinyl chloride	1.0	U	12.5	10.0		ug/L		80	43 - 157	0	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*96*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-551642/4
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/11/22 17:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*66 - 120*		*11/11/22 17:29*	*1*

Lab Sample ID: LCS 240-551642/3
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.82		ug/L		98	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-175783-J-3 MS
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.98		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-175783-N-3 MSD
Matrix: Water
Analysis Batch: 551642

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.47		ug/L		95	51 - 153	5	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: MB 240-551689/4
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/13/22 05:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*118*		*66 - 120*		*11/13/22 05:54*	*1*

Lab Sample ID: LCS 240-551689/3
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.78		ug/L		98	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-175891-G-8 MS
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.1		10.0	11.7		ug/L		96	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*

Lab Sample ID: 240-175891-O-8 MSD
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	11.5		ug/L		94	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-175891-O-8 MSD
Matrix: Water
Analysis Batch: 551689

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*112*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

GC/MS VOA

Analysis Batch: 551642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175774-2	MW-51_110222	Total/NA	Water	8260D SIM	
240-175774-4	MW-69_110222	Total/NA	Water	8260D SIM	
MB 240-551642/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551642/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175783-J-3 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175783-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175774-3	MW-19_110222	Total/NA	Water	8260D SIM	
MB 240-551689/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-551689/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-175891-G-8 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-175891-O-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 551823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-175774-1	TRIP BLANK_45	Total/NA	Water	8260D	
240-175774-2	MW-51_110222	Total/NA	Water	8260D	
240-175774-3	MW-19_110222	Total/NA	Water	8260D	
240-175774-4	MW-69_110222	Total/NA	Water	8260D	
MB 240-551823/8	Method Blank	Total/NA	Water	8260D	
LCS 240-551823/5	Lab Control Sample	Total/NA	Water	8260D	
240-175886-L-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-175886-N-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Client Sample ID: TRIP BLANK_45

Lab Sample ID: 240-175774-1
Matrix: Water
Date Collected: 11/02/22 00:00
Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 16:24

Client Sample ID: MW-51_110222

Lab Sample ID: 240-175774-2
Matrix: Water
Date Collected: 11/02/22 09:05
Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 18:05
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/11/22 21:38

Client Sample ID: MW-19_110222

Lab Sample ID: 240-175774-3
Matrix: Water
Date Collected: 11/02/22 09:55
Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 18:30
Total/NA	Analysis	8260D SIM		3	551689	CS	EET CAN	11/13/22 06:43

Client Sample ID: MW-69_110222

Lab Sample ID: 240-175774-4
Matrix: Water
Date Collected: 11/02/22 11:00
Date Received: 11/03/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	551823	SAM	EET CAN	11/14/22 18:55
Total/NA	Analysis	8260D SIM		1	551642	CS	EET CAN	11/11/22 22:27

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-175774-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_45	-	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-51_110222	11/2/22	905		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-19_110222		955		6						6					N	G	X	X	X	X	X	X	X	
MW-69_110222		1100		6						6					N	G	X	X	X	X	X	X	X	

240-175774 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	11/2/22 1200	Novi Cold Storage	Arcadis	11/2/22 1200
Sommer Lang	Arcadis	11/2/22 1440			11/2/22 1800
	FedEx	11/2/22 1530	Received in Laboratory by:	Company:	Date/Time:

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 175714
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-3-22 Opened on 11-3-22

Cooler unpacked by:

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # EC Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 ea (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Y)
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. (Yes) No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered (Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) 1x40mL for TB-45 (x2) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 175774

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	(IR-13) IR-15	0.1	0.8	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	(IR-13) IR-15	0.6	1.3	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

Eurofins Canton

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/16/2022 3:04:30 PM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

DATA VERIFICATION REPORT

November 17, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 175774-1
Sample date: 2022-11-02
Report received by CADENA: 2022-11-16
Initial Data Verification completed by CADENA: 2022-11-17
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 175774-1

		Sample Name:	TRIP BLANK_45				MW-51_110222				MW-19_110222				MW-69_110222			
		Lab Sample ID:	2401757741				2401757742				2401757743				2401757744			
		Sample Date:	11/2/2022				11/2/2022				11/2/2022				11/2/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.75	1.0	ug/l	J	0.97	1.0	ug/l	J	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.89	1.0	ug/l	J	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.89	1.0	ug/l	J	ND	1.0	ug/l	---
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					4.0	2.0	ug/l	---	240	6.0	ug/l	---	17	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176263-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Authorized for release by
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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176263-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176263-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176263-1	TRIP BLANK_79	Water	11/10/22 00:00	11/11/22 08:00
240-176263-2	MW-221S_111022	Water	11/10/22 13:05	11/11/22 08:00
240-176263-3	MW-122_111022	Water	11/10/22 14:05	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Client Sample ID: TRIP BLANK_79 — Lab Sample ID: 240-176263-1

No Detections.

Client Sample ID: MW-221S_111022 — Lab Sample ID: 240-176263-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.1		1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-122_111022 — Lab Sample ID: 240-176263-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	3.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Client Sample ID: TRIP BLANK_79

Date Collected: 11/10/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176263-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 14:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 14:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 14:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 14:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/17/22 14:26*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/17/22 14:26*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/17/22 14:26*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 14:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Client Sample ID: MW-221S_111022
Date Collected: 11/10/22 13:05
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176263-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 12:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 12:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 19:01	1
cis-1,2-Dichloroethene	**3.1**		1.0	0.46	ug/L			11/17/22 19:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 19:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/17/22 19:01*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/17/22 19:01*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 19:01*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/17/22 19:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Client Sample ID: MW-122_111022
Date Collected: 11/10/22 14:05
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176263-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 12:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/21/22 12:48*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 19:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 19:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 19:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:27	1
Vinyl chloride	**3.1**		1.0	0.45	ug/L			11/17/22 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 19:27*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 19:27*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/17/22 19:27*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 19:27*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176252-C-2 MS	Matrix Spike	98	91	99	93
240-176252-E-2 MSD	Matrix Spike Duplicate	98	92	98	93
240-176263-1	TRIP BLANK_79	98	90	99	91
240-176263-2	MW-221S_111022	100	92	101	89
240-176263-3	MW-122_111022	99	91	102	91
LCS 240-552444/4	Lab Control Sample	96	94	100	96
MB 240-552444/7	Method Blank	99	93	100	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176263-2	MW-221S_111022	80
240-176263-3	MW-122_111022	81
240-176280-D-11 MS	Matrix Spike	79
240-176280-G-11 MSD	Matrix Spike Duplicate	77
LCS 240-552844/3	Lab Control Sample	81
MB 240-552844/4	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552444/7
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 12:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 12:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 12:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 12:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 12:46*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/22 12:46*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 12:46*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/17/22 12:46*	*1*

Lab Sample ID: LCS 240-552444/4
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.3		ug/L		89	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176252-C-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	20.6		ug/L		82	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	21.3		ug/L		85	61 - 124
Vinyl chloride	1.0	U	12.5	13.9		ug/L		111	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176252-C-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: 240-176252-E-2 MSD
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	19.8		ug/L		79	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.6		ug/L		83	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	14.4		ug/L		115	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552844/4
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 10:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		66 - 120		11/21/22 10:41	1

Lab Sample ID: LCS 240-552844/3
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.58		ug/L		96	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	81		66 - 120

Lab Sample ID: 240-176280-D-11 MS
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	76		10.0	87.9	4	ug/L		121	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176280-G-11 MSD
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	76		10.0	89.1	4	ug/L		133	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

GC/MS VOA

Analysis Batch: 552444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176263-1	TRIP BLANK_79	Total/NA	Water	8260D	
240-176263-2	MW-221S_111022	Total/NA	Water	8260D	
240-176263-3	MW-122_111022	Total/NA	Water	8260D	
MB 240-552444/7	Method Blank	Total/NA	Water	8260D	
LCS 240-552444/4	Lab Control Sample	Total/NA	Water	8260D	
240-176252-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176252-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 552844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176263-2	MW-221S_111022	Total/NA	Water	8260D SIM	
240-176263-3	MW-122_111022	Total/NA	Water	8260D SIM	
MB 240-552844/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552844/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176280-D-11 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176280-G-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Client Sample ID: TRIP BLANK_79

Lab Sample ID: 240-176263-1
Matrix: Water
Date Collected: 11/10/22 00:00
Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 14:26

Client Sample ID: MW-221S_111022

Lab Sample ID: 240-176263-2
Matrix: Water
Date Collected: 11/10/22 13:05
Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 19:01
Total/NA	Analysis	8260D SIM		1	552844	CS	EET CAN	11/21/22 12:22

Client Sample ID: MW-122_111022

Lab Sample ID: 240-176263-3
Matrix: Water
Date Collected: 11/10/22 14:05
Date Received: 11/11/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 19:27
Total/NA	Analysis	8260D SIM		1	552844	CS	EET CAN	11/21/22 12:48

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176263-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	TAT if different from below		Walk-in client
Phone: 248-994-2240	Sampler Name: Sommer Guy	10 day — 3 weeks / 2 weeks / 1 week / 2 days / 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 30146655.401.03	Shipping/Tracking No:			
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_79	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-22S_111022	11/10/22	1305		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-122_111022	11/10/22	1405		6						6					N	G	X	X	X	X	X	X	X	1

240-176263 Chain of Custody

Possible Hazard Identification: Non-Hazard / Flammable / Skin Irritant / Poison B / Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client / Disposal By Lab / Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/10/22 1500	Novi Cold Storage	Arcadis	11/10/22 1500
	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/10/22 1515		EENA	11/10/22 1515
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				EETDC	11-11-22 800

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176263
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by: Nancy Rogers

Cooler Received on 11-11-22 Opened on 11-11-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1 ~~Foam Box~~ Client Cooler Box Other _____

~~Packing material used:~~ ~~Bubble Wrap~~ ~~Foam~~ ~~Plastic Bag~~ ~~None~~ Other _____

COOLANT: Wet Ice Blue Ice Dry Ice ~~Water~~ ~~None~~

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176263

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176263-1
Sample date: 2022-11-10
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:3
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176263-1

		Sample Name:	TRIP BLANK_79				MW-221S_111022				MW-122_111022			
		Lab Sample ID:	2401762631				2401762632				2401762633			
		Sample Date:	11/10/2022				11/10/2022				11/10/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC													
OSW-8260D													
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	3.1	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.1	1.0	ug/l	---
OSW-8260DSIM													
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 8:29:32 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176264-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/29/2022 8:29:32 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Job ID: 240-176264-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176264-1

Receipt
The samples were received on 11/11/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.4°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176264-1	TRIP BLANK_06	Water	11/09/22 00:00	11/11/22 08:00
240-176264-2	PMW-3_110922	Water	11/09/22 10:25	11/11/22 08:00
240-176264-3	PMW-2_110922	Water	11/09/22 11:40	11/11/22 08:00
240-176264-4	MW-38_110922	Water	11/09/22 13:30	11/11/22 08:00
240-176264-5	MW-219S_110922	Water	11/09/22 14:25	11/11/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Client Sample ID: TRIP BLANK_06 — Lab Sample ID: 240-176264-1

No Detections.

Client Sample ID: PMW-3_110922 — Lab Sample ID: 240-176264-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1700		67	31	ug/L	66.667		8260D	Total/NA
trans-1,2-Dichloroethene	120		67	34	ug/L	66.667		8260D	Total/NA
Vinyl chloride	160		67	30	ug/L	66.667		8260D	Total/NA

Client Sample ID: PMW-2_110922 — Lab Sample ID: 240-176264-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2200		50	23	ug/L	50		8260D	Total/NA
trans-1,2-Dichloroethene	180		50	26	ug/L	50		8260D	Total/NA
Vinyl chloride	760		50	23	ug/L	50		8260D	Total/NA

Client Sample ID: MW-38_110922 — Lab Sample ID: 240-176264-4

No Detections.

Client Sample ID: MW-219S_110922 — Lab Sample ID: 240-176264-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Client Sample ID: TRIP BLANK_06
Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 14:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 14:51	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 14:51	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 14:51	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/17/22 14:51*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/17/22 14:51*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 14:51*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/17/22 14:51*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Client Sample ID: PMW-3_110922
Date Collected: 11/09/22 10:25
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 13:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/21/22 13:13*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	67	U	67	33	ug/L			11/17/22 20:42	66.667
cis-1,2-Dichloroethene	**1700**		67	31	ug/L			11/17/22 20:42	66.667
Tetrachloroethene	67	U	67	29	ug/L			11/17/22 20:42	66.667
trans-1,2-Dichloroethene	**120**		67	34	ug/L			11/17/22 20:42	66.667
Trichloroethene	67	U	67	29	ug/L			11/17/22 20:42	66.667
Vinyl chloride	**160**		67	30	ug/L			11/17/22 20:42	66.667

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/17/22 20:42*	*66.667*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/17/22 20:42*	*66.667*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 20:42*	*66.667*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/17/22 20:42*	*66.667*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Client Sample ID: PMW-2_110922
Date Collected: 11/09/22 11:40
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			11/21/22 13:38	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/21/22 13:38*	*2*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	50	U	50	25	ug/L			11/21/22 13:45	50
cis-1,2-Dichloroethene	**2200**		50	23	ug/L			11/21/22 13:45	50
Tetrachloroethene	50	U	50	22	ug/L			11/21/22 13:45	50
trans-1,2-Dichloroethene	**180**		50	26	ug/L			11/21/22 13:45	50
Trichloroethene	50	U	50	22	ug/L			11/21/22 13:45	50
Vinyl chloride	**760**		50	23	ug/L			11/21/22 13:45	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/21/22 13:45*	*50*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/21/22 13:45*	*50*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/21/22 13:45*	*50*
Dibromofluoromethane (Surr)	*107*		*73 - 120*		*11/21/22 13:45*	*50*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Client Sample ID: MW-38_110922
Date Collected: 11/09/22 13:30
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 14:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 14:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 19:52	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 19:52	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:52	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 19:52	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 19:52	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 19:52*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/17/22 19:52*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/17/22 19:52*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/17/22 19:52*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Client Sample ID: MW-219S_110922
Date Collected: 11/09/22 14:25
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 14:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 14:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 20:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 20:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 20:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 20:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 20:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/17/22 20:17*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/17/22 20:17*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/17/22 20:17*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/17/22 20:17*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176252-C-2 MS	Matrix Spike	98	91	99	93
240-176252-E-2 MSD	Matrix Spike Duplicate	98	92	98	93
240-176264-1	TRIP BLANK_06	101	92	101	92
240-176264-2	PMW-3_110922	101	89	100	89
240-176264-3	PMW-2_110922	97	88	100	107
240-176264-4	MW-38_110922	99	89	102	89
240-176264-5	MW-219S_110922	101	91	101	91
LCS 240-552444/4	Lab Control Sample	96	94	100	96
LCS 240-552949/5	Lab Control Sample	93	93	107	98
MB 240-552444/7	Method Blank	99	93	100	92
MB 240-552949/8	Method Blank	102	95	102	110

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176264-2	PMW-3_110922	82
240-176264-3	PMW-2_110922	82
240-176264-4	MW-38_110922	80
240-176264-5	MW-219S_110922	80
240-176280-D-11 MS	Matrix Spike	79
240-176280-G-11 MSD	Matrix Spike Duplicate	77
LCS 240-552844/3	Lab Control Sample	81
MB 240-552844/4	Method Blank	80

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-552444/7
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/17/22 12:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/17/22 12:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/17/22 12:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/17/22 12:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/17/22 12:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/17/22 12:46*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/17/22 12:46*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/17/22 12:46*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/17/22 12:46*	*1*

Lab Sample ID: LCS 240-552444/4
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.3		ug/L		89	63 - 134
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	25.0	24.0		ug/L		96	75 - 124
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176252-C-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	21.0		ug/L		84	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.2		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	20.6		ug/L		82	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 136
Trichloroethene	1.0	U	25.0	21.3		ug/L		85	61 - 124
Vinyl chloride	1.0	U	12.5	13.9		ug/L		111	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*99*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176252-C-2 MS
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: 240-176252-E-2 MSD
Matrix: Water
Analysis Batch: 552444

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.8		ug/L		83	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	19.8		ug/L		79	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.7		ug/L		87	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.6		ug/L		83	61 - 124	3	15
Vinyl chloride	1.0	U	12.5	14.4		ug/L		115	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Lab Sample ID: MB 240-552949/8
Matrix: Water
Analysis Batch: 552949

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/21/22 12:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/21/22 12:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/21/22 12:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/21/22 12:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/21/22 12:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		62 - 137		11/21/22 12:09	1
4-Bromofluorobenzene (Surr)	95		56 - 136		11/21/22 12:09	1
Toluene-d8 (Surr)	102		78 - 122		11/21/22 12:09	1
Dibromofluoromethane (Surr)	110		73 - 120		11/21/22 12:09	1

Lab Sample ID: LCS 240-552949/5
Matrix: Water
Analysis Batch: 552949

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	26.8		ug/L		107	63 - 134
cis-1,2-Dichloroethene	25.0	26.3		ug/L		105	77 - 123
Tetrachloroethene	25.0	28.3		ug/L		113	76 - 123
trans-1,2-Dichloroethene	25.0	25.9		ug/L		104	75 - 124
Trichloroethene	25.0	26.1		ug/L		104	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-552949/5
Matrix: Water
Analysis Batch: 552949

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	25.5		ug/L		102	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*
Toluene-d8 (Surr)	*107*		*78 - 122*
Dibromofluoromethane (Surr)	*98*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552844/4
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 10:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/21/22 10:41*	*1*

Lab Sample ID: LCS 240-552844/3
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.58		ug/L		96	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-176280-D-11 MS
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	76		10.0	87.9	4	ug/L		121	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176280-G-11 MSD
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	76		10.0	89.1	4	ug/L		133	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176280-G-11 MSD
Matrix: Water
Analysis Batch: 552844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

GC/MS VOA

Analysis Batch: 552444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176264-1	TRIP BLANK_06	Total/NA	Water	8260D	
240-176264-2	PMW-3_110922	Total/NA	Water	8260D	
240-176264-4	MW-38_110922	Total/NA	Water	8260D	
240-176264-5	MW-219S_110922	Total/NA	Water	8260D	
MB 240-552444/7	Method Blank	Total/NA	Water	8260D	
LCS 240-552444/4	Lab Control Sample	Total/NA	Water	8260D	
240-176252-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176252-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 552844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176264-2	PMW-3_110922	Total/NA	Water	8260D SIM	
240-176264-3	PMW-2_110922	Total/NA	Water	8260D SIM	
240-176264-4	MW-38_110922	Total/NA	Water	8260D SIM	
240-176264-5	MW-219S_110922	Total/NA	Water	8260D SIM	
MB 240-552844/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552844/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176280-D-11 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176280-G-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176264-3	PMW-2_110922	Total/NA	Water	8260D	
MB 240-552949/8	Method Blank	Total/NA	Water	8260D	
LCS 240-552949/5	Lab Control Sample	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Client Sample ID: TRIP BLANK_06
Date Collected: 11/09/22 00:00
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 14:51

Client Sample ID: PMW-3_110922
Date Collected: 11/09/22 10:25
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		66.667	552444	SAM	EET CAN	11/17/22 20:42
Total/NA	Analysis	8260D SIM		1	552844	CS	EET CAN	11/21/22 13:13

Client Sample ID: PMW-2_110922
Date Collected: 11/09/22 11:40
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		50	552949	SAM	EET CAN	11/21/22 13:45
Total/NA	Analysis	8260D SIM		2	552844	CS	EET CAN	11/21/22 13:38

Client Sample ID: MW-38_110922
Date Collected: 11/09/22 13:30
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 19:52
Total/NA	Analysis	8260D SIM		1	552844	CS	EET CAN	11/21/22 14:04

Client Sample ID: MW-219S_110922
Date Collected: 11/09/22 14:25
Date Received: 11/11/22 08:00

Lab Sample ID: 240-176264-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	552444	SAM	EET CAN	11/17/22 20:17
Total/NA	Analysis	8260D SIM		1	552844	CS	EET CAN	11/21/22 14:29

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176264-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_06	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
PMW-3_110922	11/9/22	1025		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
PMW-2_110922	11/9/22	1140		6						6					N	G	X	X	X	X	X	X	X	CONTAINS TRACER DYE
MW-38_110922	11/9/22	1330		6						6					N	G	X	X	X	X	X	X	X	
MW-2195_110922	11/9/22	1425		6						6					N	G	X	X	X	X	X	X	X	

240-176264 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time	Received by	Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	11/9/22 1530	Novi Cold Storage	Arcadis	11/9/22 1530
Relinquished by:	ARCADIS	11/10/22 1515		EEN	11/10/22 1515
Relinquished by:			Received in Laboratory by:	EETMC	11-11-22 80C

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 146264
Barberton Facility

Client Arcadis Site Name _____ Cooler unpacked by:

Cooler Received on 11-11-22 Opened on 11-11-22

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # 1 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # none Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176264

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.2	1.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	2.4	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176264-1
Sample date: 2022-11-09
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:5
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176264-1

		Sample Name:	TRIP BLANK_06				PMW-3_110922				PMW-2_110922				MW-38_110922				MW-219S_110922			
		Lab Sample ID:	2401762641				2401762642				2401762643				2401762644				2401762645			
		Sample Date:	11/9/2022				11/9/2022				11/9/2022				11/9/2022				11/9/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	67	ug/l	---	ND	50	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	1700	67	ug/l	---	2200	50	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	67	ug/l	---	ND	50	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	120	67	ug/l	---	180	50	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	67	ug/l	---	ND	50	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	160	67	ug/l	---	760	50	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	4.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:38:30 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176477-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
11/29/2022 7:38:30 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176477-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176477-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following samples was outside the upper control limit: MW-57_111122 (240-176477-2), MW-64_111122 (240-176477-3), MW-71_111122 (240-176477-4) and MW-220S_111122 (240-176477-5). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176477-1	TRIP BLANK_66	Water	11/11/22 00:00	11/15/22 10:00
240-176477-2	MW-57_111122	Water	11/11/22 08:55	11/15/22 10:00
240-176477-3	MW-64_111122	Water	11/11/22 09:55	11/15/22 10:00
240-176477-4	MW-71_111122	Water	11/11/22 10:45	11/15/22 10:00
240-176477-5	MW-220S_111122	Water	11/11/22 11:35	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Client Sample ID: TRIP BLANK_66 — Lab Sample ID: 240-176477-1

No Detections.

Client Sample ID: MW-57_111122 — Lab Sample ID: 240-176477-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.61	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-64_111122 — Lab Sample ID: 240-176477-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.56	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	4.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-71_111122 — Lab Sample ID: 240-176477-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.89	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.89	J	1.0	0.46	ug/L	1		8260D	Total/NA

Client Sample ID: MW-220S_111122 — Lab Sample ID: 240-176477-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Client Sample ID: TRIP BLANK_66

Date Collected: 11/11/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 13:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 13:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 13:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 13:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 13:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 13:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/22/22 13:32*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/22 13:32*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/22 13:32*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/22/22 13:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Client Sample ID: MW-57_111122
Date Collected: 11/11/22 08:55
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			11/18/22 01:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*124*	*S1+*	*66 - 120*		*11/18/22 01:12*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 13:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 13:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 13:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 13:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 13:55	1
Vinyl chloride	0.61	J	1.0	0.45	ug/L			11/22/22 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/22/22 13:55*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/22/22 13:55*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/22/22 13:55*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*11/22/22 13:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Client Sample ID: MW-64_111122

Date Collected: 11/11/22 09:55
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 01:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*135*	*S1+*	*66 - 120*		*11/18/22 01:36*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 14:18	1
cis-1,2-Dichloroethene	**0.56**	**J**	1.0	0.46	ug/L			11/22/22 14:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 14:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 14:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 14:18	1
Vinyl chloride	**4.0**		1.0	0.45	ug/L			11/22/22 14:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/22/22 14:18*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/22 14:18*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/22 14:18*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/22/22 14:18*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Client Sample ID: MW-71_111122
Date Collected: 11/11/22 10:45
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.89**	**J**	2.0	0.86	ug/L			11/18/22 02:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*132*	*S1+*	*66 - 120*		*11/18/22 02:01*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 14:41	1
cis-1,2-Dichloroethene	**0.89**	**J**	1.0	0.46	ug/L			11/22/22 14:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 14:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 14:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 14:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 14:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/22/22 14:41*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/22/22 14:41*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/22/22 14:41*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/22/22 14:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Client Sample ID: MW-220S_111122
Date Collected: 11/11/22 11:35
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 02:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*136*	*S1+*	*66 - 120*		*11/18/22 02:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/22/22 15:04*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/22/22 15:04*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/22/22 15:04*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/22/22 15:04*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176369-B-11 MS	Matrix Spike	84	96	97	77
240-176369-B-11 MSD	Matrix Spike Duplicate	88	100	100	81
240-176477-1	TRIP BLANK_66	96	97	99	87
240-176477-2	MW-57_111122	90	93	96	83
240-176477-3	MW-64_111122	95	96	98	86
240-176477-4	MW-71_111122	85	86	92	81
240-176477-5	MW-220S_111122	91	93	96	82
LCS 240-553103/5	Lab Control Sample	85	103	101	85
MB 240-553103/9	Method Blank	90	91	95	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176475-I-4 MS	Matrix Spike	119
240-176475-O-4 MSD	Matrix Spike Duplicate	123 S1+
240-176477-2	MW-57_111122	124 S1+
240-176477-3	MW-64_111122	135 S1+
240-176477-4	MW-71_111122	132 S1+
240-176477-5	MW-220S_111122	136 S1+
LCS 240-552553/4	Lab Control Sample	124 S1+
MB 240-552553/5	Method Blank	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553103/9
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 12:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 12:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 12:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 12:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/22/22 12:22*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/22/22 12:22*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/22/22 12:22*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/22/22 12:22*	*1*

Lab Sample ID: LCS 240-553103/5
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.5		ug/L		102	63 - 134
cis-1,2-Dichloroethene	20.0	18.2		ug/L		91	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		93	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	17.3		ug/L		86	70 - 122
Vinyl chloride	20.0	17.7		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-176369-B-11 MS
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	4.0	U	80.0	76.6		ug/L		96	56 - 135
cis-1,2-Dichloroethene	96		80.0	158		ug/L		78	66 - 128
Tetrachloroethene	4.0	U	80.0	66.3		ug/L		83	62 - 131
trans-1,2-Dichloroethene	4.0	U	80.0	79.8		ug/L		100	56 - 136
Trichloroethene	31		80.0	91.7		ug/L		76	61 - 124
Vinyl chloride	3.0	J	80.0	73.2		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176369-B-11 MS
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*77*		*73 - 120*

Lab Sample ID: 240-176369-B-11 MSD
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	4.0	U	80.0	76.1		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	96		80.0	159		ug/L		79	66 - 128	0	14
Tetrachloroethene	4.0	U	80.0	67.5		ug/L		84	62 - 131	2	20
trans-1,2-Dichloroethene	4.0	U	80.0	79.6		ug/L		100	56 - 136	0	15
Trichloroethene	31		80.0	90.8		ug/L		75	61 - 124	1	15
Vinyl chloride	3.0	J	80.0	70.7		ug/L		85	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552553/5
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/17/22 19:08*	*1*

Lab Sample ID: LCS 240-552553/4
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.20		ug/L		92	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*124*	*S1+*	*66 - 120*

Lab Sample ID: 240-176475-I-4 MS
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.04		ug/L		90	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-176475-O-4 MSD
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.56		ug/L		96	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*123*	*S1+*	*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

GC/MS VOA

Analysis Batch: 552553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176477-2	MW-57_111122	Total/NA	Water	8260D SIM	
240-176477-3	MW-64_111122	Total/NA	Water	8260D SIM	
240-176477-4	MW-71_111122	Total/NA	Water	8260D SIM	
240-176477-5	MW-220S_111122	Total/NA	Water	8260D SIM	
MB 240-552553/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552553/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176475-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176475-O-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176477-1	TRIP BLANK_66	Total/NA	Water	8260D	
240-176477-2	MW-57_111122	Total/NA	Water	8260D	
240-176477-3	MW-64_111122	Total/NA	Water	8260D	
240-176477-4	MW-71_111122	Total/NA	Water	8260D	
240-176477-5	MW-220S_111122	Total/NA	Water	8260D	
MB 240-553103/9	Method Blank	Total/NA	Water	8260D	
LCS 240-553103/5	Lab Control Sample	Total/NA	Water	8260D	
240-176369-B-11 MS	Matrix Spike	Total/NA	Water	8260D	
240-176369-B-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Client Sample ID: TRIP BLANK_66
Date Collected: 11/11/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 13:32

Client Sample ID: MW-57_111122
Date Collected: 11/11/22 08:55
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 13:55
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 01:12

Client Sample ID: MW-64_111122
Date Collected: 11/11/22 09:55
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 14:18
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 01:36

Client Sample ID: MW-71_111122
Date Collected: 11/11/22 10:45
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 14:41
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 02:01

Client Sample ID: MW-220S_111122
Date Collected: 11/11/22 11:35
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176477-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 15:04
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 02:25

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176477-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03					
PO # 30146655.401.03					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_66	/	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-57_111122	11/11/22	855		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-64_111122	11/11/22	955		6						6					N	G	X	X	X	X	X	X	X	
MW-71_111122	11/11/22	1045		6						6					N	G	X	X	X	X	X	X	X	
MW-220S_111122	11/11/22	1135		6						6					N	G	X	X	X	X	X	X	X	

240-176477 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sam[illegible] longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	11/11/22 1245	Novi Cold Storage	Arcadis	11/11/22 1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/14/22 0950			11/14/22 0950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/14/22 0945		BJH	11-15-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176477
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TT Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Correct	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176477

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176477-1
Sample date: 2022-11-11
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:5
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> SURROGATE recoveries were outside of laboratory control limits biased HIGH for 1 of 1 surrogates in the tests/samples noted. Associated results were either non-detect so were not affected by the high bias or detected below the RL so already qualified as estimated so qualification of results was not required. GCMS-SIM VOC samples -02, -03, -04, -05 and QC batch LCS.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia, Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176477-1

		Sample Name:	TRIP BLANK_66				MW-57_111122				MW-64_111122				MW-71_111122				MW-220S_111122			
		Lab Sample ID:	2401764771				2401764772				2401764773				2401764774				2401764775			
		Sample Date:	11/11/2022				11/11/2022				11/11/2022				11/11/2022				11/11/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.56	1.0	ug/l	J	0.89	1.0	ug/l	J	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.61	1.0	ug/l	J	4.0	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					1.6	2.0	ug/l	J	ND	2.0	ug/l	---	0.89	2.0	ug/l	J	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 4:47:38 PM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176478-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
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Table of Contents

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176478-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176478-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following samples was outside the upper control limit: MW-42_111222 (240-176478-2), MW-211S_111222 (240-176478-3) and MW-212S_111222 (240-176478-5). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176478-1	TRIP BLANK_25	Water	11/12/22 00:00	11/15/22 10:00
240-176478-2	MW-42_111222	Water	11/12/22 09:05	11/15/22 10:00
240-176478-3	MW-211S_111222	Water	11/12/22 10:00	11/15/22 10:00
240-176478-4	MW-35_111222	Water	11/12/22 10:50	11/15/22 10:00
240-176478-5	MW-212S_111222	Water	11/12/22 11:45	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Client Sample ID: TRIP BLANK_25 — Lab Sample ID: 240-176478-1

No Detections.

Client Sample ID: MW-42_111222 — Lab Sample ID: 240-176478-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.65	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-211S_111222 — Lab Sample ID: 240-176478-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.44	J	1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-35_111222 — Lab Sample ID: 240-176478-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.1		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-212S_111222 — Lab Sample ID: 240-176478-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.3		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.94	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Client Sample ID: TRIP BLANK_25

Date Collected: 11/12/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 15:27	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 15:27	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 15:27	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 15:27	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 15:27	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*11/22/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/22/22 15:27*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/22/22 15:27*	*1*
Dibromofluoromethane (Surr)	*81*		*73 - 120*		*11/22/22 15:27*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Client Sample ID: MW-42_111222
Date Collected: 11/12/22 09:05
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 02:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*130*	*S1+*	*66 - 120*		*11/18/22 02:49*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 15:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 15:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 15:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 15:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 15:50	1
Vinyl chloride	**0.65**	**J**	1.0	0.45	ug/L			11/22/22 15:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/22/22 15:50*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/22/22 15:50*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/22/22 15:50*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*11/22/22 15:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Client Sample ID: MW-211S_111222
Date Collected: 11/12/22 10:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 03:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*130*	*S1+*	*66 - 120*		*11/18/22 03:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 16:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 16:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 16:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 16:13	1
Trichloroethene	**0.44**	**J**	1.0	0.44	ug/L			11/22/22 16:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*11/22/22 16:13*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/22/22 16:13*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/22/22 16:13*	*1*
Dibromofluoromethane (Surr)	*79*		*73 - 120*		*11/22/22 16:13*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Client Sample ID: MW-35_111222
Date Collected: 11/12/22 10:50
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.1		2.0	0.86	ug/L			11/22/22 06:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 06:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 16:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 16:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 16:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 16:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 16:36	1
Vinyl chloride	1.2		1.0	0.45	ug/L			11/22/22 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/22/22 16:36*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/22/22 16:36*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/22 16:36*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/22/22 16:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Client Sample ID: MW-212S_111222
Date Collected: 11/12/22 11:45
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 04:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*133*	*S1+*	*66 - 120*		*11/18/22 04:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 16:59	1
cis-1,2-Dichloroethene	**2.3**		1.0	0.46	ug/L			11/22/22 16:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 16:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 16:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 16:59	1
Vinyl chloride	**0.94**	**J**	1.0	0.45	ug/L			11/22/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/22/22 16:59*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/22/22 16:59*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/22/22 16:59*	*1*
Dibromofluoromethane (Surr)	*79*		*73 - 120*		*11/22/22 16:59*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176369-B-11 MS	Matrix Spike	84	96	97	77
240-176369-B-11 MSD	Matrix Spike Duplicate	88	100	100	81
240-176478-1	TRIP BLANK_25	86	88	93	81
240-176478-2	MW-42_111222	91	93	96	83
240-176478-3	MW-211S_111222	86	88	91	79
240-176478-4	MW-35_111222	94	100	100	87
240-176478-5	MW-212S_111222	85	86	91	79
LCS 240-553103/5	Lab Control Sample	85	103	101	85
MB 240-553103/9	Method Blank	90	91	95	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176368-E-17 MS	Matrix Spike	81
240-176368-E-17 MSD	Matrix Spike Duplicate	77
240-176475-I-4 MS	Matrix Spike	119
240-176475-O-4 MSD	Matrix Spike Duplicate	123 S1+
240-176478-2	MW-42_111222	130 S1+
240-176478-3	MW-211S_111222	130 S1+
240-176478-4	MW-35_111222	79
240-176478-5	MW-212S_111222	133 S1+
LCS 240-552553/4	Lab Control Sample	124 S1+
LCS 240-553045/3	Lab Control Sample	81
MB 240-552553/5	Method Blank	116
MB 240-553045/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553103/9
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 12:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 12:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 12:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 12:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/22/22 12:22*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/22/22 12:22*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/22/22 12:22*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/22/22 12:22*	*1*

Lab Sample ID: LCS 240-553103/5
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.5		ug/L		102	63 - 134
cis-1,2-Dichloroethene	20.0	18.2		ug/L		91	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		93	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	17.3		ug/L		86	70 - 122
Vinyl chloride	20.0	17.7		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-176369-B-11 MS
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	4.0	U	80.0	76.6		ug/L		96	56 - 135
cis-1,2-Dichloroethene	96		80.0	158		ug/L		78	66 - 128
Tetrachloroethene	4.0	U	80.0	66.3		ug/L		83	62 - 131
trans-1,2-Dichloroethene	4.0	U	80.0	79.8		ug/L		100	56 - 136
Trichloroethene	31		80.0	91.7		ug/L		76	61 - 124
Vinyl chloride	3.0	J	80.0	73.2		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176369-B-11 MS
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*77*		*73 - 120*

Lab Sample ID: 240-176369-B-11 MSD
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	4.0	U	80.0	76.1		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	96		80.0	159		ug/L		79	66 - 128	0	14
Tetrachloroethene	4.0	U	80.0	67.5		ug/L		84	62 - 131	2	20
trans-1,2-Dichloroethene	4.0	U	80.0	79.6		ug/L		100	56 - 136	0	15
Trichloroethene	31		80.0	90.8		ug/L		75	61 - 124	1	15
Vinyl chloride	3.0	J	80.0	70.7		ug/L		85	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552553/5
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/17/22 19:08*	*1*

Lab Sample ID: LCS 240-552553/4
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.20		ug/L		92	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*124*	*S1+*	*66 - 120*

Lab Sample ID: 240-176475-I-4 MS
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.04		ug/L		90	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-176475-O-4 MSD
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.56		ug/L		96	51 - 153	6	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*123*	*S1+*	*66 - 120*

Lab Sample ID: MB 240-553045/4
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 22:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 22:31*	*1*

Lab Sample ID: LCS 240-553045/3
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.30		ug/L		93	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-176368-E-17 MS
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	160		10.0	179	4	ug/L		148	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-176368-E-17 MSD
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	160		10.0	172	4	ug/L		70	51 - 153	4	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176368-E-17 MSD
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

GC/MS VOA

Analysis Batch: 552553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176478-2	MW-42_111222	Total/NA	Water	8260D SIM	
240-176478-3	MW-211S_111222	Total/NA	Water	8260D SIM	
240-176478-5	MW-212S_111222	Total/NA	Water	8260D SIM	
MB 240-552553/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552553/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176475-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176475-O-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176478-4	MW-35_111222	Total/NA	Water	8260D SIM	
MB 240-553045/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553045/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176368-E-17 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176368-E-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176478-1	TRIP BLANK_25	Total/NA	Water	8260D	
240-176478-2	MW-42_111222	Total/NA	Water	8260D	
240-176478-3	MW-211S_111222	Total/NA	Water	8260D	
240-176478-4	MW-35_111222	Total/NA	Water	8260D	
240-176478-5	MW-212S_111222	Total/NA	Water	8260D	
MB 240-553103/9	Method Blank	Total/NA	Water	8260D	
LCS 240-553103/5	Lab Control Sample	Total/NA	Water	8260D	
240-176369-B-11 MS	Matrix Spike	Total/NA	Water	8260D	
240-176369-B-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Client Sample ID: TRIP BLANK_25
Date Collected: 11/12/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 15:27

Client Sample ID: MW-42_111222
Date Collected: 11/12/22 09:05
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 15:50
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 02:49

Client Sample ID: MW-211S_111222
Date Collected: 11/12/22 10:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 16:13
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 03:14

Client Sample ID: MW-35_111222
Date Collected: 11/12/22 10:50
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 16:36
Total/NA	Analysis	8260D SIM		1	553045	CS	EET CAN	11/22/22 06:59

Client Sample ID: MW-212S_111222
Date Collected: 11/12/22 11:45
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176478-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 16:59
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 04:02

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176478-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_25	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-42_111222	11/12/22	903		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-21S_111222	11/12/22	1000		6						6					N	G	X	X	X	X	X	X	X	
MW-35_111222	11/12/22	1050		6						6					N	G	X	X	X	X	X	X	X	
MW-21S_111222	11/12/22	1145		6						6					N	G	X	X	X	X	X	X	X	

240-176478 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christa Gatlin	Arcadis	11/12/22 1245	Novi Cold Storage	Arcadis	11/12/22 1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/14/22 0950			11/14/22 0950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
		11/14/22 0952		TA	11-15-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176478
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cal Med	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176478

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	**IR Gun # (Circle)**	**Observed Temp °C**	**Corrected Temp °C**	**Coolant (Circle)**
(TA) Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 30, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176478-1
Sample date: 2022-11-12
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-30
Number of Samples:5
Sample Matrices:Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

SURROGATE recoveries were outside of laboratory control limits biased HIGH for 1 of 1 surrogates in the tests/samples noted. Associated results were non-detect so were not affected by the high bias and qualification of results was not required. GCMS-SIM VOC samples -002, -003, -005. NOTE: QC batch 552553 LCS high bias surrogate recoveries were not used to qualify field sample results.

MS/MSD recovery outliers or sample duplicate RPD outliers were not determined using a client sample from this submittal for the test and QC batch noted so qualification was not required based on these sample-specific QC outliers: GCMS-SIM VOC QC batch 552553.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176478-1

		Sample Name:	TRIP BLANK_25				MW-42_111222				MW-211S_111222				MW-35_111222				MW-212S_111222			
		Lab Sample ID:	2401764781				2401764782				2401764783				2401764784				2401764785			
		Sample Date:	11/12/2022				11/12/2022				11/12/2022				11/12/2022				11/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	2.3	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.44	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.65	1.0	ug/l	J	ND	1.0	ug/l	---	1.2	1.0	ug/l	---	0.94	1.0	ug/l	J
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	3.1	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:35:48 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176480-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/2/2022 8:35:48 AM

Authorized for release by
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Designee for
Michael DelMonico, Project Manager I
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Job ID: 240-176480-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176480-1

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 2.0°C and 3.6°C

GC/MS VOA
Method 8260D_SIM: Surrogate recovery for the following samples was outside the upper control limit: MW-210S_111222 (240-176480-3). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176480-1	TRIP BLANK_210	Water	11/12/22 00:00	11/15/22 10:00
240-176480-2	MW-41_111222	Water	11/12/22 09:55	11/15/22 10:00
240-176480-3	MW-210S_111222	Water	11/12/22 10:50	11/15/22 10:00
240-176480-4	MW-34_111222	Water	11/12/22 12:05	11/15/22 10:00
240-176480-5	MW-15-61D_111222	Water	11/12/22 13:55	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Client Sample ID: TRIP BLANK_210 — Lab Sample ID: 240-176480-1

No Detections.

Client Sample ID: MW-41_111222 — Lab Sample ID: 240-176480-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	11		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	0.64	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	0.71	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-210S_111222 — Lab Sample ID: 240-176480-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	15		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.9		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	4.5		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-34_111222 — Lab Sample ID: 240-176480-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.8		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	1.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-15-61D_111222 — Lab Sample ID: 240-176480-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Client Sample ID: TRIP BLANK_210

Date Collected: 11/12/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176480-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 20:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 20:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 20:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 20:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 20:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/22/22 20:01*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/22/22 20:01*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/22/22 20:01*	*1*
Dibromofluoromethane (Surr)	*92*		*73 - 120*		*11/22/22 20:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Client Sample ID: MW-41_111222
Date Collected: 11/12/22 09:55
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176480-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**11**		2.0	0.86	ug/L			11/22/22 07:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/22/22 07:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 14:20	1
cis-1,2-Dichloroethene	**0.64**	**J**	1.0	0.46	ug/L			11/23/22 14:20	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 14:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 14:20	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 14:20	1
Vinyl chloride	**0.71**	**J**	1.0	0.45	ug/L			11/23/22 14:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/23/22 14:20*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/23/22 14:20*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 14:20*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 14:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Client Sample ID: MW-210S_111222
Date Collected: 11/12/22 10:50
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176480-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 04:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*141*	*S1+*	*66 - 120*		*11/18/22 04:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 19:21	1
cis-1,2-Dichloroethene	**15**		1.0	0.46	ug/L			11/23/22 19:21	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 19:21	1
trans-1,2-Dichloroethene	**1.9**		1.0	0.51	ug/L			11/23/22 19:21	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 19:21	1
Vinyl chloride	**4.5**		1.0	0.45	ug/L			11/23/22 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 19:21*	*1*
4-Bromofluorobenzene (Surr)	*86*		*56 - 136*		*11/23/22 19:21*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 19:21*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 19:21*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Client Sample ID: MW-34_111222
Date Collected: 11/12/22 12:05
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176480-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.8		2.0	0.86	ug/L			11/18/22 02:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*		*11/18/22 02:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 20:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 20:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 20:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 20:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 20:26	1
Vinyl chloride	1.9		1.0	0.45	ug/L			11/22/22 20:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/22/22 20:26*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/22/22 20:26*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/22/22 20:26*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/22/22 20:26*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Client Sample ID: MW-15-61D_111222
Date Collected: 11/12/22 13:55
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176480-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 02:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/18/22 02:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 19:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 19:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 19:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 19:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 19:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 19:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/23/22 19:46*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/23/22 19:46*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/23/22 19:46*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/23/22 19:46*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176480-1	TRIP BLANK_210	99	89	100	92
240-176480-2	MW-41_111222	98	87	98	87
240-176480-3	MW-210S_111222	99	86	98	86
240-176480-4	MW-34_111222	99	90	96	89
240-176480-4 MS	MW-34_111222	97	94	98	94
240-176480-4 MSD	MW-34_111222	94	92	97	90
240-176480-5	MW-15-61D_111222	100	88	100	88
240-176484-J-4 MS	Matrix Spike	97	92	98	90
240-176484-P-4 MSD	Matrix Spike Duplicate	95	90	98	89
LCS 240-553117/4	Lab Control Sample	94	94	98	91
LCS 240-553297/4	Lab Control Sample	94	94	97	91
MB 240-553117/7	Method Blank	98	92	99	87
MB 240-553297/7	Method Blank	97	90	98	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176368-E-17 MS	Matrix Spike	81
240-176368-E-17 MSD	Matrix Spike Duplicate	77
240-176475-I-4 MS	Matrix Spike	119
240-176475-O-4 MSD	Matrix Spike Duplicate	123 S1+
240-176480-2	MW-41_111222	77
240-176480-3	MW-210S_111222	141 S1+
240-176480-4	MW-34_111222	81
240-176480-5	MW-15-61D_111222	79
240-176484-G-4 MS	Matrix Spike	78
240-176484-O-4 MSD	Matrix Spike Duplicate	80
LCS 240-552553/4	Lab Control Sample	124 S1+
LCS 240-552560/3	Lab Control Sample	78
LCS 240-553045/3	Lab Control Sample	81
MB 240-552553/5	Method Blank	116
MB 240-552560/4	Method Blank	79
MB 240-553045/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553117/7
Matrix: Water
Analysis Batch: 553117

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 12:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 12:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 12:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 12:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/22/22 12:31*	*1*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*		*11/22/22 12:31*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/22 12:31*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/22/22 12:31*	*1*

Lab Sample ID: LCS 240-553117/4
Matrix: Water
Analysis Batch: 553117

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	23.6		ug/L		95	63 - 134
cis-1,2-Dichloroethene	25.0	22.8		ug/L		91	77 - 123
Tetrachloroethene	25.0	24.2		ug/L		97	76 - 123
trans-1,2-Dichloroethene	25.0	23.1		ug/L		92	75 - 124
Trichloroethene	25.0	22.8		ug/L		91	70 - 122
Vinyl chloride	12.5	13.4		ug/L		107	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176480-4 MS
Matrix: Water
Analysis Batch: 553117

Client Sample ID: MW-34_111222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	23.7		ug/L		95	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	23.3		ug/L		93	66 - 128
Tetrachloroethene	1.0	U	25.0	22.0		ug/L		88	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		91	56 - 136
Trichloroethene	1.0	U	25.0	21.3		ug/L		85	61 - 124
Vinyl chloride	1.9		12.5	14.6		ug/L		102	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176480-4 MS
Matrix: Water
Analysis Batch: 553117

Client Sample ID: MW-34_111222
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	94		73 - 120

Lab Sample ID: 240-176480-4 MSD
Matrix: Water
Analysis Batch: 553117

Client Sample ID: MW-34_111222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	56 - 135	3	26
cis-1,2-Dichloroethene	1.0	U	25.0	22.3		ug/L		89	66 - 128	4	14
Tetrachloroethene	1.0	U	25.0	21.9		ug/L		88	62 - 131	0	20
trans-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		88	56 - 136	3	15
Trichloroethene	1.0	U	25.0	21.2		ug/L		85	61 - 124	1	15
Vinyl chloride	1.9		12.5	14.1		ug/L		98	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	94		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: MB 240-553297/7
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 11:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 11:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 11:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 11:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		62 - 137		11/23/22 11:50	1
4-Bromofluorobenzene (Surr)	90		56 - 136		11/23/22 11:50	1
Toluene-d8 (Surr)	98		78 - 122		11/23/22 11:50	1
Dibromofluoromethane (Surr)	86		73 - 120		11/23/22 11:50	1

Lab Sample ID: LCS 240-553297/4
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.6		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.4		ug/L		90	75 - 124
Trichloroethene	25.0	22.3		ug/L		89	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-553297/4
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			12.5	13.2		ug/L		105	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135		
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128		
Tetrachloroethene	1.0	U	25.0	22.5		ug/L		90	62 - 131		
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136		
Trichloroethene	1.0	U	25.0	21.2		ug/L		85	61 - 124		
Vinyl chloride	2.0		12.5	13.0		ug/L		89	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-176484-P-4 MSD
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.5		ug/L		82	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.0		ug/L		80	61 - 124	6	15
Vinyl chloride	2.0		12.5	12.7		ug/L		86	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552553/5
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 19:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 120*		*11/17/22 19:08*	*1*

Lab Sample ID: LCS 240-552553/4
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.20		ug/L		92	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*124*	*S1+*	*66 - 120*

Lab Sample ID: 240-176475-I-4 MS
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	9.04		ug/L		90	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 120*

Lab Sample ID: 240-176475-O-4 MSD
Matrix: Water
Analysis Batch: 552553

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.56		ug/L		96	51 - 153	6	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*123*	*S1+*	*66 - 120*

Lab Sample ID: MB 240-552560/4
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 23:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/17/22 23:06*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-552560/3
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.29		ug/L		93	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176484-G-4 MS
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	1.5	J	10.0	12.5		ug/L		110	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176484-O-4 MSD
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	1.5	J	10.0	12.2		ug/L		108	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: MB 240-553045/4
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/21/22 22:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/21/22 22:31*	*1*

Lab Sample ID: LCS 240-553045/3
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.30		ug/L		93	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176368-E-17 MS
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	160		10.0	179	4	ug/L		148	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: 240-176368-E-17 MSD
Matrix: Water
Analysis Batch: 553045

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	160		10.0	172	4	ug/L		70	51 - 153	4	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

GC/MS VOA

Analysis Batch: 552553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176480-3	MW-210S_111222	Total/NA	Water	8260D SIM	
MB 240-552553/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552553/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176475-I-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176475-O-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 552560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176480-4	MW-34_111222	Total/NA	Water	8260D SIM	
240-176480-5	MW-15-61D_111222	Total/NA	Water	8260D SIM	
MB 240-552560/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552560/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176484-G-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176484-O-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176480-2	MW-41_111222	Total/NA	Water	8260D SIM	
MB 240-553045/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553045/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176368-E-17 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176368-E-17 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176480-1	TRIP BLANK_210	Total/NA	Water	8260D	
240-176480-4	MW-34_111222	Total/NA	Water	8260D	
MB 240-553117/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553117/4	Lab Control Sample	Total/NA	Water	8260D	
240-176480-4 MS	MW-34_111222	Total/NA	Water	8260D	
240-176480-4 MSD	MW-34_111222	Total/NA	Water	8260D	

Analysis Batch: 553297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176480-2	MW-41_111222	Total/NA	Water	8260D	
240-176480-3	MW-210S_111222	Total/NA	Water	8260D	
240-176480-5	MW-15-61D_111222	Total/NA	Water	8260D	
MB 240-553297/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553297/4	Lab Control Sample	Total/NA	Water	8260D	
240-176484-J-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176484-P-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Client Sample ID: TRIP BLANK_210

Lab Sample ID: 240-176480-1
Matrix: Water
Date Collected: 11/12/22 00:00
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553117	SAM	EET CAN	11/22/22 20:01

Client Sample ID: MW-41_111222

Lab Sample ID: 240-176480-2
Matrix: Water
Date Collected: 11/12/22 09:55
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 14:20
Total/NA	Analysis	8260D SIM		1	553045	CS	EET CAN	11/22/22 07:25

Client Sample ID: MW-210S_111222

Lab Sample ID: 240-176480-3
Matrix: Water
Date Collected: 11/12/22 10:50
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 19:21
Total/NA	Analysis	8260D SIM		1	552553	CS	EET CAN	11/18/22 04:51

Client Sample ID: MW-34_111222

Lab Sample ID: 240-176480-4
Matrix: Water
Date Collected: 11/12/22 12:05
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553117	SAM	EET CAN	11/22/22 20:26
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 02:05

Client Sample ID: MW-15-61D_111222

Lab Sample ID: 240-176480-5
Matrix: Water
Date Collected: 11/12/22 13:55
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 19:46
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 02:31

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176480-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis		Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Sommer Guy	TAT if different from below: 10 day; 3 weeks; 2 weeks; 1 week; 2 days; 1 day		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03					
PO # 30146655.401.03					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_210	---	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-41_111222	11/12/22	0955		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-2105_111222	11/12/22	1050		6						6					N	G	X	X	X	X	X	X	X	
MW-34_111222	11/12/22	1205		6						6					N	G	X	X	X	X	X	X	X	
MW-15-61D_111222	11/12/22	1355		6						6					N	G	X	X	X	X	X	X	X	

240-176480 Chain of Custody

Possible Hazard Identification: Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are ...): Return to Client; Disposal By Lab; Archive For ...

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/12/22 1500	Novi Cold Storage	Arcadis	11/12/22 1500
	ARCADIS	11/14/22 0950			11/14/22 0950
		11/14/21 0952			11-15-22 10:00

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176480
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt [X] See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cal Med	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176480

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.6	3.6	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	1.6	1.6	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice

DATA VERIFICATION REPORT

December 04, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176480-1
Sample date: 2022-11-12
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-04
Number of Samples:5
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> SURROGATE recoveries were outside of laboratory control limits biased HIGH for surrogates in the tests/samples noted. Associated results were non-detect so were not affected by the high bias and qualification of results was not required. GCMS-SIM VOC - sample -003. NOTE: GCMS VOC QC batch 552553 LCS high bias surrogate recovery was not used to qualify field sample results.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176480-1

		Sample Name:	TRIP BLANK_210				MW-41_111222				MW-210S_111222				MW-34_111222				MW-15-61D_111222			
		Lab Sample ID:	2401764801				2401764802				2401764803				2401764804				2401764805			
		Sample Date:	11/12/2022				11/12/2022				11/12/2022				11/12/2022				11/12/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																						
	OSW-8260D																					
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	0.64	1.0	ug/l	J	15	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.9	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.71	1.0	ug/l	J	4.5	1.0	ug/l	---	1.9	1.0	ug/l	---	ND	1.0	ug/l	---
	OSW-8260DSIM																					
	1,4-Dioxane	123-91-1					11	2.0	ug/l	---	ND	2.0	ug/l	---	5.8	2.0	ug/l	---	ND	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:39:06 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176482-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Authorized for release by
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Job ID: 240-176482-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176482-1

Comments
No additional comments.

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6º C, 2.0º C and 3.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176482-1	TRIP BLANK_211	Water	11/12/22 00:00	11/15/22 10:00
240-176482-2	MW-40_111222	Water	11/12/22 09:46	11/15/22 10:00
240-176482-3	MW-31_111222	Water	11/12/22 10:43	11/15/22 10:00
240-176482-4	MW-208S_111222	Water	11/12/22 11:37	11/15/22 10:00
240-176482-5	MW-30_111222	Water	11/12/22 12:31	11/15/22 10:00
240-176482-6	MW-209S_111222	Water	11/12/22 13:47	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: TRIP BLANK_211 — Lab Sample ID: 240-176482-1

No Detections.

Client Sample ID: MW-40_111222 — Lab Sample ID: 240-176482-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.4		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	1.8		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-31_111222 — Lab Sample ID: 240-176482-3

No Detections.

Client Sample ID: MW-208S_111222 — Lab Sample ID: 240-176482-4

No Detections.

Client Sample ID: MW-30_111222 — Lab Sample ID: 240-176482-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	12		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-209S_111222 — Lab Sample ID: 240-176482-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.1		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: TRIP BLANK_211

Date Collected: 11/12/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176482-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 17:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 17:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/22/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/22/22 17:22*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*11/22/22 17:22*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/22/22 17:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: MW-40_111222
Date Collected: 11/12/22 09:46
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176482-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 02:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/18/22 02:56*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 17:46	1
cis-1,2-Dichloroethene	**2.4**		1.0	0.46	ug/L			11/22/22 17:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 17:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 17:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 17:46	1
Vinyl chloride	**1.8**		1.0	0.45	ug/L			11/22/22 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/22/22 17:46*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*11/22/22 17:46*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/22/22 17:46*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/22/22 17:46*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: MW-31_111222
Date Collected: 11/12/22 10:43
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176482-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 03:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/18/22 03:22*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 18:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 18:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 18:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 18:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 18:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/22/22 18:09*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/22/22 18:09*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/22/22 18:09*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*11/22/22 18:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: MW-208S_111222
Date Collected: 11/12/22 11:37
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176482-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 03:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/18/22 03:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 18:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 18:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 18:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 18:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 18:32	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 18:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*11/22/22 18:32*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/22/22 18:32*	*1*
Toluene-d8 (Surr)	*92*		*78 - 122*		*11/22/22 18:32*	*1*
Dibromofluoromethane (Surr)	*77*		*73 - 120*		*11/22/22 18:32*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: MW-30_111222
Date Collected: 11/12/22 12:31
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176482-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	12		2.0	0.86	ug/L			11/18/22 04:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/18/22 04:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 18:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 18:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 18:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 18:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 18:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/22/22 18:55*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/22/22 18:55*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/22/22 18:55*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/22/22 18:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: MW-209S_111222
Date Collected: 11/12/22 13:47
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176482-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 05:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/18/22 05:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 19:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 19:18	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 19:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 19:18	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 19:18	1
Vinyl chloride	**1.1**		1.0	0.45	ug/L			11/22/22 19:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/22/22 19:18*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/22/22 19:18*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/22/22 19:18*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/22/22 19:18*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176369-B-11 MS	Matrix Spike	84	96	97	77
240-176369-B-11 MSD	Matrix Spike Duplicate	88	100	100	81
240-176482-1	TRIP BLANK_211	95	102	102	87
240-176482-2	MW-40_111222	94	95	97	87
240-176482-3	MW-31_111222	92	90	95	83
240-176482-4	MW-208S_111222	87	89	92	77
240-176482-5	MW-30_111222	95	97	99	88
240-176482-6	MW-209S_111222	96	96	98	88
LCS 240-553103/5	Lab Control Sample	85	103	101	85
MB 240-553103/9	Method Blank	90	91	95	82

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176482-2	MW-40_111222	79
240-176482-3	MW-31_111222	79
240-176482-4	MW-208S_111222	80
240-176482-5	MW-30_111222	77
240-176482-6	MW-209S_111222	79
240-176484-G-4 MS	Matrix Spike	78
240-176484-O-4 MSD	Matrix Spike Duplicate	80
LCS 240-552560/3	Lab Control Sample	78
MB 240-552560/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553103/9
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/22/22 12:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/22/22 12:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/22/22 12:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/22/22 12:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/22/22 12:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/22/22 12:22*	*1*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/22/22 12:22*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/22/22 12:22*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/22/22 12:22*	*1*

Lab Sample ID: LCS 240-553103/5
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.5		ug/L		102	63 - 134
cis-1,2-Dichloroethene	20.0	18.2		ug/L		91	77 - 123
Tetrachloroethene	20.0	18.7		ug/L		93	76 - 123
trans-1,2-Dichloroethene	20.0	20.7		ug/L		103	75 - 124
Trichloroethene	20.0	17.3		ug/L		86	70 - 122
Vinyl chloride	20.0	17.7		ug/L		88	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*101*		*78 - 122*
Dibromofluoromethane (Surr)	*85*		*73 - 120*

Lab Sample ID: 240-176369-B-11 MS
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	4.0	U	80.0	76.6		ug/L		96	56 - 135
cis-1,2-Dichloroethene	96		80.0	158		ug/L		78	66 - 128
Tetrachloroethene	4.0	U	80.0	66.3		ug/L		83	62 - 131
trans-1,2-Dichloroethene	4.0	U	80.0	79.8		ug/L		100	56 - 136
Trichloroethene	31		80.0	91.7		ug/L		76	61 - 124
Vinyl chloride	3.0	J	80.0	73.2		ug/L		88	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176369-B-11 MS
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*77*		*73 - 120*

Lab Sample ID: 240-176369-B-11 MSD
Matrix: Water
Analysis Batch: 553103

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	4.0	U	80.0	76.1		ug/L		95	56 - 135	1	26
cis-1,2-Dichloroethene	96		80.0	159		ug/L		79	66 - 128	0	14
Tetrachloroethene	4.0	U	80.0	67.5		ug/L		84	62 - 131	2	20
trans-1,2-Dichloroethene	4.0	U	80.0	79.6		ug/L		100	56 - 136	0	15
Trichloroethene	31		80.0	90.8		ug/L		75	61 - 124	1	15
Vinyl chloride	3.0	J	80.0	70.7		ug/L		85	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*100*		*78 - 122*
Dibromofluoromethane (Surr)	*81*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552560/4
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 23:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/17/22 23:06*	*1*

Lab Sample ID: LCS 240-552560/3
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.29		ug/L		93	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176484-G-4 MS
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	1.5	J	10.0	12.5		ug/L		110	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176484-O-4 MSD
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	1.5	J	10.0	12.2		ug/L		108	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

GC/MS VOA

Analysis Batch: 552560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176482-2	MW-40_111222	Total/NA	Water	8260D SIM	
240-176482-3	MW-31_111222	Total/NA	Water	8260D SIM	
240-176482-4	MW-208S_111222	Total/NA	Water	8260D SIM	
240-176482-5	MW-30_111222	Total/NA	Water	8260D SIM	
240-176482-6	MW-209S_111222	Total/NA	Water	8260D SIM	
MB 240-552560/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552560/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176484-G-4 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176484-O-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176482-1	TRIP BLANK_211	Total/NA	Water	8260D	
240-176482-2	MW-40_111222	Total/NA	Water	8260D	
240-176482-3	MW-31_111222	Total/NA	Water	8260D	
240-176482-4	MW-208S_111222	Total/NA	Water	8260D	
240-176482-5	MW-30_111222	Total/NA	Water	8260D	
240-176482-6	MW-209S_111222	Total/NA	Water	8260D	
MB 240-553103/9	Method Blank	Total/NA	Water	8260D	
LCS 240-553103/5	Lab Control Sample	Total/NA	Water	8260D	
240-176369-B-11 MS	Matrix Spike	Total/NA	Water	8260D	
240-176369-B-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Client Sample ID: TRIP BLANK_211
Lab Sample ID: 240-176482-1
Date Collected: 11/12/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 17:22

Client Sample ID: MW-40_111222
Lab Sample ID: 240-176482-2
Date Collected: 11/12/22 09:46
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 17:46
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 02:56

Client Sample ID: MW-31_111222
Lab Sample ID: 240-176482-3
Date Collected: 11/12/22 10:43
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 18:09
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 03:22

Client Sample ID: MW-208S_111222
Lab Sample ID: 240-176482-4
Date Collected: 11/12/22 11:37
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 18:32
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 03:47

Client Sample ID: MW-30_111222
Lab Sample ID: 240-176482-5
Date Collected: 11/12/22 12:31
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 18:55
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 04:38

Client Sample ID: MW-209S_111222
Lab Sample ID: 240-176482-6
Date Collected: 11/12/22 13:47
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553103	TJL1	EET CAN	11/22/22 19:18
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 05:04

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176482-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: CHRISTINA WEAVER	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 211	11/12/22	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-40_ 111222	11/12/22	0946		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-31_ 111222	11/12/22	1043		6						6					N	G	X	X	X	X	X	X	X	
MW-208S_ 111222	11/12/22	1137		6						6					N	G	X	X	X	X	X	X	X	
MW-30_ 111222	11/12/22	1231		6						6					N	G	X	X	X	X	X	X	X	
MW-209S_ 111222	11/12/22	1317		6						6					N	G	X	X	X	X	X	X	X	

240-176482 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/12/22 / 1500	NOVI COLD STORAGE	ARCADIS	11/12/22 / 1500
	ARCADIS	11/14/22 0950			11/14/22 0950
		11/14/22 0957		TMA	11/15/22 0800

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176452
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(N)
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cal Med	(Yes)	(No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176482

Eurofins - Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(1) TA Client Box Other	IR-13 (IR-15)	3.6	3.6	(Wet Ice) Blue Ice Dry Ice Water None
(2) TA Client Box Other	IR-13 (IR-15)	2.0	2.0	(Wet Ice) Blue Ice Dry Ice Water None
(3) TA Client Box Other	IR-13 (IR-15)	1.6	1.6	(Wet Ice) Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176482-1
Sample date: 2022-11-12
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:6
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176482-1

	Sample Name:	TRIP BLANK_211				MW-40_111222				MW-31_111222				MW-208S_111222				MW-30_111222				MW-209S_111222			
	Lab Sample ID:	2401764821				2401764822				2401764823				2401764824				2401764825				2401764826			
	Sample Date:	11/12/2022				11/12/2022				11/12/2022				11/12/2022				11/12/2022				11/12/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																									
OSW-8260D																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	2.4	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.8	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	1.1	1.0	ug/l	---
OSW-8260DSIM																									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	12	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:40:13 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176484-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/29/2022 7:40:13 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Job ID: 240-176484-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176484-1

Comments
No additional comments.

Receipt
The samples were received on 11/15/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6º C, 2.0º C and 3.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176484-1	TRIP BLANK_56	Water	11/12/22 00:00	11/15/22 10:00
240-176484-2	MW-213S_111222	Water	11/12/22 09:51	11/15/22 10:00
240-176484-3	MW-43_111222	Water	11/12/22 11:06	11/15/22 10:00
240-176484-4	MW-52_111222	Water	11/12/22 12:36	11/15/22 10:00
240-176484-5	MW-120_111222	Water	11/12/22 14:26	11/15/22 10:00
240-176484-6	DUP-06	Water	11/12/22 00:00	11/15/22 10:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: TRIP BLANK_56 — Lab Sample ID: 240-176484-1

No Detections.

Client Sample ID: MW-213S_111222 — Lab Sample ID: 240-176484-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.67	J	1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	1.2		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-43_111222 — Lab Sample ID: 240-176484-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-52_111222 — Lab Sample ID: 240-176484-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.5	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	2.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-120_111222 — Lab Sample ID: 240-176484-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	4.1		1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: DUP-06 — Lab Sample ID: 240-176484-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.4	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: TRIP BLANK_56

Date Collected: 11/12/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176484-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 12:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 12:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 12:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 12:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 12:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 12:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/23/22 12:15*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/23/22 12:15*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 12:15*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/23/22 12:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: MW-213S_111222
Date Collected: 11/12/22 09:51
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176484-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 05:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/18/22 05:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 14:45	1
cis-1,2-Dichloroethene	**0.67**	**J**	1.0	0.46	ug/L			11/23/22 14:45	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 14:45	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 14:45	1
Vinyl chloride	**1.2**		1.0	0.45	ug/L			11/23/22 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/23/22 14:45*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 14:45*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 14:45*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 14:45*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: MW-43_111222
Date Collected: 11/12/22 11:06
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176484-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			11/18/22 05:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*82*		*66 - 120*		*11/18/22 05:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 15:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 15:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 15:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 15:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 15:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 15:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/23/22 15:10*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 15:10*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/23/22 15:10*	*1*
Dibromofluoromethane (Surr)	*91*		*73 - 120*		*11/23/22 15:10*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: MW-52_111222
Date Collected: 11/12/22 12:36
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176484-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.5	J	2.0	0.86	ug/L			11/18/22 06:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/18/22 06:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 15:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 15:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 15:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 15:35	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 15:35	1
Vinyl chloride	2.0		1.0	0.45	ug/L			11/23/22 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 15:35*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/23/22 15:35*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/23/22 15:35*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/23/22 15:35*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: MW-120_111222
Date Collected: 11/12/22 14:26
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176484-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/18/22 07:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/18/22 07:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 16:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 16:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 16:00	1
Trichloroethene	**4.1**		1.0	0.44	ug/L			11/23/22 16:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 16:00*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 16:00*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 16:00*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/23/22 16:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: DUP-06
Date Collected: 11/12/22 00:00
Date Received: 11/15/22 10:00

Lab Sample ID: 240-176484-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.4	J	2.0	0.86	ug/L			11/18/22 08:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/18/22 08:02*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 16:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 16:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 16:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/23/22 16:25*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 16:25*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 16:25*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/23/22 16:25*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176484-1	TRIP BLANK_56	98	89	98	89
240-176484-2	MW-213S_111222	98	90	98	87
240-176484-3	MW-43_111222	101	90	97	91
240-176484-4	MW-52_111222	99	88	96	88
240-176484-4 MS	MW-52-MS_111222	97	92	98	90
240-176484-4 MSD	MW-52-MSD_111222	95	90	98	89
240-176484-5	MW-120_111222	97	90	98	89
240-176484-6	DUP-06	100	90	98	89
LCS 240-553297/4	Lab Control Sample	94	94	97	91
MB 240-553297/7	Method Blank	97	90	98	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176484-2	MW-213S_111222	80
240-176484-3	MW-43_111222	82
240-176484-4	MW-52_111222	79
240-176484-4 MS	MW-52-MS_111222	78
240-176484-4 MSD	MW-52-MSD_111222	80
240-176484-5	MW-120_111222	79
240-176484-6	DUP-06	77
LCS 240-552560/3	Lab Control Sample	78
MB 240-552560/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553297/7
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 11:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 11:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 11:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 11:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 11:50*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 11:50*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 11:50*	*1*

Lab Sample ID: LCS 240-553297/4
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.6		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.4		ug/L		90	75 - 124
Trichloroethene	25.0	22.3		ug/L		89	70 - 122
Vinyl chloride	12.5	13.2		ug/L		105	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176484-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: MW-52-MS_111222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	22.5		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	21.2		ug/L		85	61 - 124
Vinyl chloride	2.0		12.5	13.0		ug/L		89	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176484-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: MW-52-MS_111222
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	90		73 - 120

Lab Sample ID: 240-176484-4 MSD
Matrix: Water
Analysis Batch: 553297

Client Sample ID: MW-52-MSD_111222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.5		ug/L		82	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.0		ug/L		80	61 - 124	6	15
Vinyl chloride	2.0		12.5	12.7		ug/L		86	43 - 157	3	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		62 - 137
4-Bromofluorobenzene (Surr)	90		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	89		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-552560/4
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/17/22 23:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		66 - 120		11/17/22 23:06	1

Lab Sample ID: LCS 240-552560/3
Matrix: Water
Analysis Batch: 552560

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.29		ug/L		93	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	78		66 - 120

Lab Sample ID: 240-176484-4 MS
Matrix: Water
Analysis Batch: 552560

Client Sample ID: MW-52-MS_111222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	1.5	J	10.0	12.5		ug/L		110	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*

Lab Sample ID: 240-176484-4 MSD
Matrix: Water
Analysis Batch: 552560

Client Sample ID: MW-52-MSD_111222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	1.5	J	10.0	12.2		ug/L		108	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

GC/MS VOA

Analysis Batch: 552560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176484-2	MW-213S_111222	Total/NA	Water	8260D SIM	
240-176484-3	MW-43_111222	Total/NA	Water	8260D SIM	
240-176484-4	MW-52_111222	Total/NA	Water	8260D SIM	
240-176484-5	MW-120_111222	Total/NA	Water	8260D SIM	
240-176484-6	DUP-06	Total/NA	Water	8260D SIM	
MB 240-552560/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-552560/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176484-4 MS	MW-52-MS_111222	Total/NA	Water	8260D SIM	
240-176484-4 MSD	MW-52-MSD_111222	Total/NA	Water	8260D SIM	

Analysis Batch: 553297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176484-1	TRIP BLANK_56	Total/NA	Water	8260D	
240-176484-2	MW-213S_111222	Total/NA	Water	8260D	
240-176484-3	MW-43_111222	Total/NA	Water	8260D	
240-176484-4	MW-52_111222	Total/NA	Water	8260D	
240-176484-5	MW-120_111222	Total/NA	Water	8260D	
240-176484-6	DUP-06	Total/NA	Water	8260D	
MB 240-553297/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553297/4	Lab Control Sample	Total/NA	Water	8260D	
240-176484-4 MS	MW-52-MS_111222	Total/NA	Water	8260D	
240-176484-4 MSD	MW-52-MSD_111222	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Client Sample ID: TRIP BLANK_56
Lab Sample ID: 240-176484-1
Date Collected: 11/12/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 12:15

Client Sample ID: MW-213S_111222
Lab Sample ID: 240-176484-2
Date Collected: 11/12/22 09:51
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 14:45
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 05:29

Client Sample ID: MW-43_111222
Lab Sample ID: 240-176484-3
Date Collected: 11/12/22 11:06
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 15:10
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 05:55

Client Sample ID: MW-52_111222
Lab Sample ID: 240-176484-4
Date Collected: 11/12/22 12:36
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 15:35
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 06:20

Client Sample ID: MW-120_111222
Lab Sample ID: 240-176484-5
Date Collected: 11/12/22 14:26
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 16:00
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 07:37

Client Sample ID: DUP-06
Lab Sample ID: 240-176484-6
Date Collected: 11/12/22 00:00
Matrix: Water
Date Received: 11/15/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 16:25
Total/NA	Analysis	8260D SIM		1	552560	CS	EET CAN	11/18/22 08:02

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176484-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

MICHIGAN 190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton –- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_ 56		---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-2135_111222	11/12/22	0951		X						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-43_111222		1106		X						6					N	G	X	X	X	X	X	X	X	
MW-52_111222		1236		X						6					N	G	X	X	X	X	X	X	X	
MW-52-MS_111222		1236		X						6					N	G	X	X	X	X	X	X	X	
MW-52-MSD_111222		1236		X						6					N	G	X	X	X	X	X	X	X	
MW-120_111222		1426		X						6					N	G	X	X	X	X	X	X	X	
DUP-06		—		X						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retain: ☐ Return to Client ☑ Disposal By Lab ☐ Ar

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

240-176484 Chain of Custody

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Arcadis	11/12/22 1525	Novi cold storage	Arcadis	11/12/22 1525
	ARCADIS	11/14/22 0950			11/14/22 0950
		11/14/22 0952		TTA	11-15-22 10:00

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176484
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-15-22 Opened on 11-15-22

Cooler unpacked by: Charlie

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	
10. Were correct bottle(s) used for the test(s) indicated? CK 11-16-22	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Cal Med	(Yes)	(No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 176484

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
(TA) Client Box Other	IR-13 (IR-15)	3.6	3.6	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	2.0	2.0	Wet Ice Blue Ice Dry Ice Water None
(TA) Client Box Other	IR-13 (IR-15)	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176484-1
Sample date: 2022-11-12
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:6
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176484-1

		Sample Name:	TRIP BLANK_56				MW-213S_111222				MW-43_111222				MW-52_111222				MW-120_111222				DUP-06			
		Lab Sample ID:	2401764841				2401764842				2401764843				2401764844				2401764845				2401764846			
		Sample Date:	11/12/2022				11/12/2022				11/12/2022				11/12/2022				11/12/2022				11/12/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																										
OSW-8260D																										
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	0.67	1.0	ug/l	J	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	4.1	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	1.2	1.0	ug/l	---	ND	1.0	ug/l	---	2.0	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																										
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	1.4	2.0	ug/l	J	1.5	2.0	ug/l	J	ND	2.0	ug/l	---	1.4	2.0	ug/l	J

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 7:32:49 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176523-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/29/2022 7:32:49 AM

Authorized for release by
Michael DelMonico, Project Manager I
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(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176523-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176523-1

Receipt

The samples were received on 11/16/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.9°C

GC/MS VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176523-1	TRIP BLANK_198	Water	11/14/22 00:00	11/16/22 08:00
240-176523-2	MW-15-59D_111422	Water	11/14/22 11:00	11/16/22 08:00
240-176523-3	MW-15-60D_111422	Water	11/14/22 12:50	11/16/22 08:00
240-176523-4	MW-33_111422	Water	11/14/22 14:25	11/16/22 08:00
240-176523-5	MW-50_111422	Water	11/14/22 15:30	11/16/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Client Sample ID: TRIP BLANK_198 — Lab Sample ID: 240-176523-1

No Detections.

Client Sample ID: MW-15-59D_111422 — Lab Sample ID: 240-176523-2

No Detections.

Client Sample ID: MW-15-60D_111422 — Lab Sample ID: 240-176523-3

No Detections.

Client Sample ID: MW-33_111422 — Lab Sample ID: 240-176523-4

No Detections.

Client Sample ID: MW-50_111422 — Lab Sample ID: 240-176523-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	9.0		7.1	3.3	ug/L	7.143		8260D	Total/NA
Vinyl chloride	240		7.1	3.2	ug/L	7.143		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Client Sample ID: TRIP BLANK_198
Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 12:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 12:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 12:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 12:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 12:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/23/22 12:40*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 12:40*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/23/22 12:40*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/23/22 12:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Client Sample ID: MW-15-59D_111422
Date Collected: 11/14/22 11:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 22:07*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 16:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 16:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 16:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 16:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/23/22 16:50*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/23/22 16:50*	*1*
Toluene-d8 (Surr)	*97*		*78 - 122*		*11/23/22 16:50*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 16:50*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Client Sample ID: MW-15-60D_111422
Date Collected: 11/14/22 12:50
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 22:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 22:32*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 17:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 17:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 17:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 17:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 17:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 17:15*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/23/22 17:15*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 17:15*	*1*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/23/22 17:15*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Client Sample ID: MW-33_111422
Date Collected: 11/14/22 14:25
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 22:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 22:58*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 17:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 17:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 17:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 17:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 17:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 17:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/23/22 17:41*	*1*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/23/22 17:41*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 17:41*	*1*
Dibromofluoromethane (Surr)	*87*		*73 - 120*		*11/23/22 17:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Client Sample ID: MW-50_111422
Date Collected: 11/14/22 15:30
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 23:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/22/22 23:23*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	7.1	U	7.1	3.5	ug/L			11/23/22 20:11	7.143
cis-1,2-Dichloroethene	**9.0**		7.1	3.3	ug/L			11/23/22 20:11	7.143
Tetrachloroethene	7.1	U	7.1	3.1	ug/L			11/23/22 20:11	7.143
trans-1,2-Dichloroethene	7.1	U	7.1	3.6	ug/L			11/23/22 20:11	7.143
Trichloroethene	7.1	U	7.1	3.1	ug/L			11/23/22 20:11	7.143
Vinyl chloride	**240**		7.1	3.2	ug/L			11/23/22 20:11	7.143

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/23/22 20:11*	*7.143*
4-Bromofluorobenzene (Surr)	*87*		*56 - 136*		*11/23/22 20:11*	*7.143*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/23/22 20:11*	*7.143*
Dibromofluoromethane (Surr)	*85*		*73 - 120*		*11/23/22 20:11*	*7.143*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176484-J-4 MS	Matrix Spike	97	92	98	90
240-176484-P-4 MSD	Matrix Spike Duplicate	95	90	98	89
240-176523-1	TRIP BLANK_198	98	90	99	89
240-176523-2	MW-15-59D_111422	98	88	97	87
240-176523-3	MW-15-60D_111422	99	89	98	85
240-176523-4	MW-33_111422	99	87	98	87
240-176523-5	MW-50_111422	101	87	99	85
LCS 240-553297/4	Lab Control Sample	94	94	97	91
MB 240-553297/7	Method Blank	97	90	98	86

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176523-2	MW-15-59D_111422	79
240-176523-3	MW-15-60D_111422	79
240-176523-4	MW-33_111422	79
240-176523-5	MW-50_111422	79
240-176530-B-2 MS	Matrix Spike	79
240-176530-B-2 MSD	Matrix Spike Duplicate	81
LCS 240-553220/3	Lab Control Sample	79
MB 240-553220/5	Method Blank	77

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553297/7
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 11:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 11:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 11:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/23/22 11:50*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 11:50*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/23/22 11:50*	*1*
Dibromofluoromethane (Surr)	*86*		*73 - 120*		*11/23/22 11:50*	*1*

Lab Sample ID: LCS 240-553297/4
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	24.0		ug/L		96	63 - 134
cis-1,2-Dichloroethene	25.0	22.4		ug/L		90	77 - 123
Tetrachloroethene	25.0	23.6		ug/L		94	76 - 123
trans-1,2-Dichloroethene	25.0	22.4		ug/L		90	75 - 124
Trichloroethene	25.0	22.3		ug/L		89	70 - 122
Vinyl chloride	12.5	13.2		ug/L		105	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*94*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*91*		*73 - 120*

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	20.4		ug/L		81	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.3		ug/L		85	66 - 128
Tetrachloroethene	1.0	U	25.0	22.5		ug/L		90	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	21.6		ug/L		86	56 - 136
Trichloroethene	1.0	U	25.0	21.2		ug/L		85	61 - 124
Vinyl chloride	2.0		12.5	13.0		ug/L		89	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176484-J-4 MS
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: 240-176484-P-4 MSD
Matrix: Water
Analysis Batch: 553297

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	20.5		ug/L		82	56 - 135	1	26
cis-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	66 - 128	2	14
Tetrachloroethene	1.0	U	25.0	20.8		ug/L		83	62 - 131	7	20
trans-1,2-Dichloroethene	1.0	U	25.0	21.1		ug/L		85	56 - 136	2	15
Trichloroethene	1.0	U	25.0	20.0		ug/L		80	61 - 124	6	15
Vinyl chloride	2.0		12.5	12.7		ug/L		86	43 - 157	3	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*89*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553220/5
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/22/22 18:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/22/22 18:19*	*1*

Lab Sample ID: LCS 240-553220/3
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.37		ug/L		94	80 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MS
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.0		ug/L		100	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*

Lab Sample ID: 240-176530-B-2 MSD
Matrix: Water
Analysis Batch: 553220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.85		ug/L		98	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

GC/MS VOA

Analysis Batch: 553220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176523-2	MW-15-59D_111422	Total/NA	Water	8260D SIM	
240-176523-3	MW-15-60D_111422	Total/NA	Water	8260D SIM	
240-176523-4	MW-33_111422	Total/NA	Water	8260D SIM	
240-176523-5	MW-50_111422	Total/NA	Water	8260D SIM	
MB 240-553220/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553220/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176530-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176530-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176523-1	TRIP BLANK_198	Total/NA	Water	8260D	
240-176523-2	MW-15-59D_111422	Total/NA	Water	8260D	
240-176523-3	MW-15-60D_111422	Total/NA	Water	8260D	
240-176523-4	MW-33_111422	Total/NA	Water	8260D	
240-176523-5	MW-50_111422	Total/NA	Water	8260D	
MB 240-553297/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553297/4	Lab Control Sample	Total/NA	Water	8260D	
240-176484-J-4 MS	Matrix Spike	Total/NA	Water	8260D	
240-176484-P-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Client Sample ID: TRIP BLANK_198
Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 12:40

Client Sample ID: MW-15-59D_111422
Date Collected: 11/14/22 11:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 16:50
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/22/22 22:07

Client Sample ID: MW-15-60D_111422
Date Collected: 11/14/22 12:50
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 17:15
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/22/22 22:32

Client Sample ID: MW-33_111422
Date Collected: 11/14/22 14:25
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553297	SAM	EET CAN	11/23/22 17:41
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/22/22 22:58

Client Sample ID: MW-50_111422
Date Collected: 11/14/22 15:30
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176523-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		7.143	553297	SAM	EET CAN	11/23/22 20:11
Total/NA	Analysis	8260D SIM		1	553220	CS	EET CAN	11/22/22 23:23

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176523-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

3.9 | 3.9

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other		
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	COC No:
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	of COCs
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:	10 day ☑ 2 weeks	For lab use only
Project Number: 30146655.401.03	Shipping/Tracking No:		Walk-in client
PO # 30146655.401.03			Lab sampling
			Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_198	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-15-59D_111422	11/14/22	1100		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-15-60D_111422	11/14/22	1250		6						6					N	G	X	X	X	X	X	X	X	
MW-33_111422	11/14/22	1425		6						6					N	G	X	X	X	X	X	X	X	
MW-50_111422	11/14/22	1530		6						6					N	G	X	X	X	X	X	X	X	

240-176523 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	11/14/22 1640	Received by: Novi Cold Storage	Arcadis	11/14/22 1640
Relinquished by:	ARCADIS	11/15/22 0900	Received by:	EETA	11/15/22 0900
Relinquished by:	EETA	11/15/22 1145	Received in Laboratory by: Rachelle Harolito	EETNE	11-16 22 800

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176253
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-16-22 Opened on 11-16-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 01042016	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

November 29, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176523-1
Sample date: 2022-11-14
Report received by CADENA: 2022-11-29
Initial Data Verification completed by CADENA: 2022-11-29
Number of Samples:5
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176523-1

	Sample Name:	TRIP BLANK_198				MW-15-59D_111422				MW-15-60D_111422				MW-33_111422				MW-50_111422			
	Lab Sample ID:	2401765231				2401765232				2401765233				2401765234				2401765235			
	Sample Date:	11/14/2022				11/14/2022				11/14/2022				11/14/2022				11/14/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	9.0	7.1	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	7.1	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	240	7.1	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/2/2022 8:25:49 AM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176531-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Job ID: 240-176531-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176531-1

Comments
No additional comments.

Receipt
The samples were received on 11/16/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.9º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176531-1	TRIP BLANK_209	Water	11/14/22 00:00	11/16/22 08:00
240-176531-2	MW-66_111422	Water	11/14/22 10:00	11/16/22 08:00
240-176531-3	MW-65_111422	Water	11/14/22 11:05	11/16/22 08:00
240-176531-4	MW-44_111422	Water	11/14/22 11:50	11/16/22 08:00
240-176531-5	PW-16-01_111422	Water	11/14/22 12:40	11/16/22 08:00
240-176531-6	DUP-02	Water	11/14/22 00:00	11/16/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: TRIP BLANK_209 — Lab Sample ID: 240-176531-1

No Detections.

Client Sample ID: MW-66_111422 — Lab Sample ID: 240-176531-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.9		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-65_111422 — Lab Sample ID: 240-176531-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.9		1.0	0.46	ug/L	1		8260D	Total/NA
Vinyl chloride	8.3		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-44_111422 — Lab Sample ID: 240-176531-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	8.0		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	160		5.0	2.3	ug/L	5		8260D	Total/NA

Client Sample ID: PW-16-01_111422 — Lab Sample ID: 240-176531-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	73		20	9.2	ug/L	20		8260D	Total/NA
Vinyl chloride	930	F1	20	9.0	ug/L	20		8260D	Total/NA

Client Sample ID: DUP-02 — Lab Sample ID: 240-176531-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.2		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: TRIP BLANK_209

Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176531-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 16:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 16:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 16:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*62 - 137*		*11/23/22 16:36*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/23/22 16:36*	*1*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/23/22 16:36*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/23/22 16:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: MW-66_111422
Date Collected: 11/14/22 10:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176531-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 22:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/27/22 22:14*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 16:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 16:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 16:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 16:59	1
Vinyl chloride	**1.9**		1.0	0.45	ug/L			11/23/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*62 - 137*		*11/23/22 16:59*	*1*
4-Bromofluorobenzene (Surr)	*85*		*56 - 136*		*11/23/22 16:59*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/23/22 16:59*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*11/23/22 16:59*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: MW-65_111422
Date Collected: 11/14/22 11:05
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176531-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 06:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/23/22 06:59*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 17:22	1
cis-1,2-Dichloroethene	**3.9**		1.0	0.46	ug/L			11/23/22 17:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 17:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 17:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 17:22	1
Vinyl chloride	**8.3**		1.0	0.45	ug/L			11/23/22 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*62 - 137*		*11/23/22 17:22*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/23/22 17:22*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/23/22 17:22*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/23/22 17:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: MW-44_111422
Date Collected: 11/14/22 11:50
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176531-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**8.0**		2.0	0.86	ug/L			11/23/22 07:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/23/22 07:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	5.0	U	5.0	2.5	ug/L			11/23/22 17:46	5
cis-1,2-Dichloroethene	5.0	U	5.0	2.3	ug/L			11/23/22 17:46	5
Tetrachloroethene	5.0	U	5.0	2.2	ug/L			11/23/22 17:46	5
trans-1,2-Dichloroethene	5.0	U	5.0	2.6	ug/L			11/23/22 17:46	5
Trichloroethene	5.0	U	5.0	2.2	ug/L			11/23/22 17:46	5
Vinyl chloride	**160**		5.0	2.3	ug/L			11/23/22 17:46	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*62 - 137*		*11/23/22 17:46*	*5*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 17:46*	*5*
Toluene-d8 (Surr)	*104*		*78 - 122*		*11/23/22 17:46*	*5*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/23/22 17:46*	*5*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: PW-16-01_111422
Date Collected: 11/14/22 12:40
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176531-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 07:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/23/22 07:50*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	20	U	20	9.8	ug/L			11/23/22 18:09	20
cis-1,2-Dichloroethene	**73**		20	9.2	ug/L			11/23/22 18:09	20
Tetrachloroethene	20	U	20	8.8	ug/L			11/23/22 18:09	20
trans-1,2-Dichloroethene	20	U	20	10	ug/L			11/23/22 18:09	20
Trichloroethene	20	U	20	8.8	ug/L			11/23/22 18:09	20
Vinyl chloride	**930**	**F1**	20	9.0	ug/L			11/23/22 18:09	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*62 - 137*		*11/23/22 18:09*	*20*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*		*11/23/22 18:09*	*20*
Toluene-d8 (Surr)	*110*		*78 - 122*		*11/23/22 18:09*	*20*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/23/22 18:09*	*20*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: DUP-02

Date Collected: 11/14/22 00:00
Date Received: 11/16/22 08:00

Lab Sample ID: 240-176531-6

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 08:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/23/22 08:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 18:32	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 18:32	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:32	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 18:32	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 18:32	1
Vinyl chloride	**2.2**		1.0	0.45	ug/L			11/23/22 18:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*62 - 137*		*11/23/22 18:32*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/23/22 18:32*	*1*
Toluene-d8 (Surr)	*107*		*78 - 122*		*11/23/22 18:32*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/23/22 18:32*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176531-1	TRIP BLANK_209	104	99	96	96
240-176531-2	MW-66_111422	105	85	103	96
240-176531-3	MW-65_111422	107	89	106	99
240-176531-4	MW-44_111422	108	90	104	99
240-176531-5	PW-16-01_111422	112	91	110	101
240-176531-5 MS	PW-16-01_111422	101	98	110	94
240-176531-5 MSD	PW-16-01_111422	100	107	104	95
240-176531-6	DUP-02	109	90	107	100
LCS 240-553308/5	Lab Control Sample	100	103	112	93
MB 240-553308/8	Method Blank	103	89	103	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176531-2	MW-66_111422	76
240-176531-3	MW-65_111422	80
240-176531-4	MW-44_111422	77
240-176531-5	PW-16-01_111422	80
240-176531-6	DUP-02	78
240-176555-B-1 MS	Matrix Spike	77
240-176555-B-1 MSD	Matrix Spike Duplicate	81
240-176634-I-5 MS	Matrix Spike	80
240-176634-O-5 MSD	Matrix Spike Duplicate	80
LCS 240-553221/3	Lab Control Sample	76
LCS 240-553480/3	Lab Control Sample	76
MB 240-553221/4	Method Blank	76
MB 240-553480/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553308/8
Matrix: Water
Analysis Batch: 553308

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/23/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/23/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/23/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/23/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/23/22 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*62 - 137*		*11/23/22 11:34*	*1*
4-Bromofluorobenzene (Surr)	*89*		*56 - 136*		*11/23/22 11:34*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/23/22 11:34*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/23/22 11:34*	*1*

Lab Sample ID: LCS 240-553308/5
Matrix: Water
Analysis Batch: 553308

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	63 - 134
cis-1,2-Dichloroethene	20.0	16.3		ug/L		81	77 - 123
Tetrachloroethene	20.0	19.6		ug/L		98	76 - 123
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	75 - 124
Trichloroethene	20.0	16.7		ug/L		84	70 - 122
Vinyl chloride	20.0	16.2		ug/L		81	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*
Toluene-d8 (Surr)	*112*		*78 - 122*
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176531-5 MS
Matrix: Water
Analysis Batch: 553308

Client Sample ID: PW-16-01_111422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20	U	400	298		ug/L		75	56 - 135
cis-1,2-Dichloroethene	73		400	378		ug/L		76	66 - 128
Tetrachloroethene	20	U	400	337		ug/L		84	62 - 131
trans-1,2-Dichloroethene	20	U	400	309		ug/L		77	56 - 136
Trichloroethene	20	U	400	299		ug/L		75	61 - 124
Vinyl chloride	930	F1	400	1140		ug/L		51	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*110*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176531-5 MS
Matrix: Water
Analysis Batch: 553308

Client Sample ID: PW-16-01_111422
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176531-5 MSD
Matrix: Water
Analysis Batch: 553308

Client Sample ID: PW-16-01_111422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	20	U	400	304		ug/L		76	56 - 135	2	26
cis-1,2-Dichloroethene	73		400	387		ug/L		78	66 - 128	2	14
Tetrachloroethene	20	U	400	352		ug/L		88	62 - 131	4	20
trans-1,2-Dichloroethene	20	U	400	317		ug/L		79	56 - 136	2	15
Trichloroethene	20	U	400	316		ug/L		79	61 - 124	6	15
Vinyl chloride	930	F1	400	1090	F1	ug/L		38	43 - 157	5	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553221/4
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/23/22 06:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/23/22 06:09*	*1*

Lab Sample ID: LCS 240-553221/3
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.27		ug/L		93	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176555-B-1 MS
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	14		10.0	26.1		ug/L		116	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*

Lab Sample ID: 240-176555-B-1 MSD
Matrix: Water
Analysis Batch: 553221

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	14		10.0	27.3		ug/L		128	51 - 153	4	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*81*		*66 - 120*

Lab Sample ID: MB 240-553480/4
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553480/3
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.98		ug/L		90	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176634-I-5 MS
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176634-O-5 MSD
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	2	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176634-O-5 MSD
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

GC/MS VOA

Analysis Batch: 553221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176531-3	MW-65_111422	Total/NA	Water	8260D SIM	
240-176531-4	MW-44_111422	Total/NA	Water	8260D SIM	
240-176531-5	PW-16-01_111422	Total/NA	Water	8260D SIM	
240-176531-6	DUP-02	Total/NA	Water	8260D SIM	
MB 240-553221/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553221/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176555-B-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176555-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176531-1	TRIP BLANK_209	Total/NA	Water	8260D	
240-176531-2	MW-66_111422	Total/NA	Water	8260D	
240-176531-3	MW-65_111422	Total/NA	Water	8260D	
240-176531-4	MW-44_111422	Total/NA	Water	8260D	
240-176531-5	PW-16-01_111422	Total/NA	Water	8260D	
240-176531-6	DUP-02	Total/NA	Water	8260D	
MB 240-553308/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553308/5	Lab Control Sample	Total/NA	Water	8260D	
240-176531-5 MS	PW-16-01_111422	Total/NA	Water	8260D	
240-176531-5 MSD	PW-16-01_111422	Total/NA	Water	8260D	

Analysis Batch: 553480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176531-2	MW-66_111422	Total/NA	Water	8260D SIM	
MB 240-553480/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553480/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176634-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176634-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Client Sample ID: TRIP BLANK_209
Lab Sample ID: 240-176531-1
Date Collected: 11/14/22 00:00
Matrix: Water
Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553308	TJL1	EET CAN	11/23/22 16:36

Client Sample ID: MW-66_111422
Lab Sample ID: 240-176531-2
Date Collected: 11/14/22 10:00
Matrix: Water
Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553308	TJL1	EET CAN	11/23/22 16:59
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/27/22 22:14

Client Sample ID: MW-65_111422
Lab Sample ID: 240-176531-3
Date Collected: 11/14/22 11:05
Matrix: Water
Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553308	TJL1	EET CAN	11/23/22 17:22
Total/NA	Analysis	8260D SIM		1	553221	CS	EET CAN	11/23/22 06:59

Client Sample ID: MW-44_111422
Lab Sample ID: 240-176531-4
Date Collected: 11/14/22 11:50
Matrix: Water
Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		5	553308	TJL1	EET CAN	11/23/22 17:46
Total/NA	Analysis	8260D SIM		1	553221	CS	EET CAN	11/23/22 07:25

Client Sample ID: PW-16-01_111422
Lab Sample ID: 240-176531-5
Date Collected: 11/14/22 12:40
Matrix: Water
Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		20	553308	TJL1	EET CAN	11/23/22 18:09
Total/NA	Analysis	8260D SIM		1	553221	CS	EET CAN	11/23/22 07:50

Client Sample ID: DUP-02
Lab Sample ID: 240-176531-6
Date Collected: 11/14/22 00:00
Matrix: Water
Date Received: 11/16/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553308	TJL1	EET CAN	11/23/22 18:32
Total/NA	Analysis	8260D SIM		1	553221	CS	EET CAN	11/23/22 08:16

Laboratory References:
EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176531-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

3.9 | 3.9

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program:	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	☐ DW ☐ NPDES ☐ RCRA ☐ Other	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500		Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377		Sampler Name: Christian Garrido	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day (10 day)		Walk-in client
Phone: 248-994-2240		Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site		Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03					
PO # 30146655.401.03					

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_209	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-66_111422	11/14/22	1000		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B
MW-65_111422		1105		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B SIM
MW-44_111422		1150		6						6					N	G	X	X	X	X	X	X	X	
PW-16-01_111422		1240		6						6					N	G	X	X	X	X	X	X	X	
DUP-02	11/14/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-176531 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return to C ... hs

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	11/14/22 1330	Novi Cold Storage	Arcadis	11/14/22 1330
	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/15/22 0900		EETA	11/15/22 0900
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/15/22 1145		EETA	11-16 22800

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12/2/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: Rachelle Haidet

Cooler Received on 11-16-22 Opened on 11-16-22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.4 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes) No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 04, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176531-1
Sample date: 2022-11-14
Report received by CADENA: 2022-12-02
Initial Data Verification completed by CADENA: 2022-12-04
Number of Samples:6
Sample Matrices: Water and trip blank
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

> MS or MSD recoveries but not both or RPD only were outliers for the following analytes so results for the client sample spiked were not qualified based on these QC outliers alone: GCMS VOC sample -005 - vinyl chloride MSD recovery only biased low.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176531-1

	Sample Name:	TRIP BLANK_209				MW-66_111422				MW-65_111422				MW-44_111422				PW-16-01_111422				DUP-02			
	Lab Sample ID:	2401765311				2401765312				2401765313				2401765314				2401765315				2401765316			
	Sample Date:	11/14/2022				11/14/2022				11/14/2022				11/14/2022				11/14/2022				11/14/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																									
OSW-8260D																									
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	20	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	3.9	1.0	ug/l	---	ND	5.0	ug/l	---	73	20	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	20	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	20	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	5.0	ug/l	---	ND	20	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	1.9	1.0	ug/l	---	8.3	1.0	ug/l	---	160	5.0	ug/l	---	930	20	ug/l	---	2.2	1.0	ug/l	---
OSW-8260DSIM																									
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	8.0	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176631-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Job ID: 240-176631-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176631-1

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1°C and 1.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176631-1	TRIP BLANK_204	Water	11/15/22 00:00	11/17/22 08:00
240-176631-2	MW-45_111522	Water	11/15/22 09:40	11/17/22 08:00
240-176631-3	MW-70_111522	Water	11/15/22 10:30	11/17/22 08:00
240-176631-4	MW-53_111522	Water	11/15/22 11:20	11/17/22 08:00
240-176631-5	MW-113_111522	Water	11/15/22 12:30	11/17/22 08:00
240-176631-6	MW-199S_111522	Water	11/15/22 13:35	11/17/22 08:00
240-176631-7	DUP-04	Water	11/15/22 00:00	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: TRIP BLANK_204 — Lab Sample ID: 240-176631-1

No Detections.

Client Sample ID: MW-45_111522 — Lab Sample ID: 240-176631-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	81		10	4.6	ug/L	10		8260D	Total/NA
Vinyl chloride	290		10	4.5	ug/L	10		8260D	Total/NA

Client Sample ID: MW-70_111522 — Lab Sample ID: 240-176631-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.3	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	140		13	5.8	ug/L	12.5		8260D	Total/NA
Vinyl chloride	340		13	5.6	ug/L	12.5		8260D	Total/NA

Client Sample ID: MW-53_111522 — Lab Sample ID: 240-176631-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-113_111522 — Lab Sample ID: 240-176631-5

No Detections.

Client Sample ID: MW-199S_111522 — Lab Sample ID: 240-176631-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.2		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: DUP-04 — Lab Sample ID: 240-176631-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	72		25	12	ug/L	25		8260D	Total/NA
Vinyl chloride	260		25	11	ug/L	25		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: TRIP BLANK_204

Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/22 13:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/22 13:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 13:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/22 13:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 13:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/22 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/26/22 13:29*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/26/22 13:29*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/26/22 13:29*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*11/26/22 13:29*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: MW-45_111522
Date Collected: 11/15/22 09:40
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 01:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/28/22 01:12*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/22 19:17	1
cis-1,2-Dichloroethene	**81**		10	4.6	ug/L			11/29/22 15:29	10
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 19:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/22 19:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 19:17	1
Vinyl chloride	**290**		10	4.5	ug/L			11/29/22 15:29	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*62 - 137*		*11/26/22 19:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*87*		*62 - 137*		*11/29/22 15:29*	*10*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/26/22 19:17*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 15:29*	*10*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/26/22 19:17*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/29/22 15:29*	*10*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/26/22 19:17*	*1*
Dibromofluoromethane (Surr)	*80*		*73 - 120*		*11/29/22 15:29*	*10*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: MW-70_111522
Date Collected: 11/15/22 10:30
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**1.3**	**J**	2.0	0.86	ug/L			11/28/22 01:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/28/22 01:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	6.1	ug/L			11/26/22 17:45	12.5
cis-1,2-Dichloroethene	**140**		13	5.8	ug/L			11/26/22 17:45	12.5
Tetrachloroethene	13	U	13	5.5	ug/L			11/26/22 17:45	12.5
trans-1,2-Dichloroethene	13	U	13	6.4	ug/L			11/26/22 17:45	12.5
Trichloroethene	13	U	13	5.5	ug/L			11/26/22 17:45	12.5
Vinyl chloride	**340**		13	5.6	ug/L			11/26/22 17:45	12.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/26/22 17:45*	*12.5*
4-Bromofluorobenzene (Surr)	*80*		*56 - 136*		*11/26/22 17:45*	*12.5*
Toluene-d8 (Surr)	*96*		*78 - 122*		*11/26/22 17:45*	*12.5*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/26/22 17:45*	*12.5*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: MW-53_111522
Date Collected: 11/15/22 11:20
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 02:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/28/22 02:03*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/22 18:08	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/22 18:08	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 18:08	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/22 18:08	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 18:08	1
Vinyl chloride	**1.0**		1.0	0.45	ug/L			11/26/22 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*62 - 137*		*11/26/22 18:08*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/26/22 18:08*	*1*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/26/22 18:08*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/26/22 18:08*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: MW-113_111522
Date Collected: 11/15/22 12:30
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 02:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/28/22 02:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/22 18:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/22 18:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 18:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/22 18:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 18:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/22 18:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*62 - 137*		*11/26/22 18:31*	*1*
4-Bromofluorobenzene (Surr)	*81*		*56 - 136*		*11/26/22 18:31*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/26/22 18:31*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/26/22 18:31*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: MW-199S_111522
Date Collected: 11/15/22 13:35
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-6
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			11/28/22 02:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/28/22 02:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/22 18:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/22 18:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 18:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/22 18:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 18:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/22 18:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/26/22 18:54*	*1*
4-Bromofluorobenzene (Surr)	*79*		*56 - 136*		*11/26/22 18:54*	*1*
Toluene-d8 (Surr)	*93*		*78 - 122*		*11/26/22 18:54*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/26/22 18:54*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: DUP-04
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-7
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 03:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/28/22 03:19*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	25	U	25	12	ug/L			11/29/22 15:53	25
cis-1,2-Dichloroethene	**72**		25	12	ug/L			11/29/22 15:53	25
Tetrachloroethene	25	U	25	11	ug/L			11/29/22 15:53	25
trans-1,2-Dichloroethene	25	U	25	13	ug/L			11/29/22 15:53	25
Trichloroethene	25	U	25	11	ug/L			11/29/22 15:53	25
Vinyl chloride	**260**		25	11	ug/L			11/29/22 15:53	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/29/22 15:53*	*25*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/22 15:53*	*25*
Toluene-d8 (Surr)	*95*		*78 - 122*		*11/29/22 15:53*	*25*
Dibromofluoromethane (Surr)	*77*		*73 - 120*		*11/29/22 15:53*	*25*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176631-1	TRIP BLANK_204	95	78	93	93
240-176631-2	MW-45_111522	95	78	93	95
240-176631-2	MW-45_111522	87	99	99	80
240-176631-3	MW-70_111522	100	80	96	101
240-176631-3 MS	MW-70_111522	91	91	97	93
240-176631-3 MSD	MW-70_111522	85	83	94	90
240-176631-4	MW-53_111522	101	81	95	100
240-176631-5	MW-113_111522	100	81	99	101
240-176631-6	MW-199S_111522	98	79	93	99
240-176631-7	DUP-04	84	97	95	77
240-176634-E-5 MS	Matrix Spike	88	101	98	82
240-176634-F-5 MSD	Matrix Spike Duplicate	84	100	97	78
LCS 240-553467/5	Lab Control Sample	94	92	97	95
LCS 240-553688/5	Lab Control Sample	86	97	95	79
MB 240-553467/8	Method Blank	94	78	91	94
MB 240-553688/8	Method Blank	93	107	101	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176631-2	MW-45_111522	77
240-176631-3	MW-70_111522	79
240-176631-4	MW-53_111522	77
240-176631-5	MW-113_111522	78
240-176631-6	MW-199S_111522	77
240-176631-7	DUP-04	77
240-176634-I-5 MS	Matrix Spike	80
240-176634-O-5 MSD	Matrix Spike Duplicate	80
LCS 240-553480/3	Lab Control Sample	76
MB 240-553480/4	Method Blank	76

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553467/8
Matrix: Water
Analysis Batch: 553467

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/26/22 10:46	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/26/22 10:46	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 10:46	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/26/22 10:46	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/26/22 10:46	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/26/22 10:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*		*11/26/22 10:46*	*1*
4-Bromofluorobenzene (Surr)	*78*		*56 - 136*		*11/26/22 10:46*	*1*
Toluene-d8 (Surr)	*91*		*78 - 122*		*11/26/22 10:46*	*1*
Dibromofluoromethane (Surr)	*94*		*73 - 120*		*11/26/22 10:46*	*1*

Lab Sample ID: LCS 240-553467/5
Matrix: Water
Analysis Batch: 553467

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.8		ug/L		84	63 - 134
cis-1,2-Dichloroethene	20.0	17.8		ug/L		89	77 - 123
Tetrachloroethene	20.0	19.9		ug/L		99	76 - 123
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	75 - 124
Trichloroethene	20.0	18.5		ug/L		93	70 - 122
Vinyl chloride	20.0	17.2		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*62 - 137*
4-Bromofluorobenzene (Surr)	*92*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176631-3 MS
Matrix: Water
Analysis Batch: 553467

Client Sample ID: MW-70_111522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	13	U	250	229		ug/L		92	56 - 135
cis-1,2-Dichloroethene	140		250	378		ug/L		96	66 - 128
Tetrachloroethene	13	U	250	253		ug/L		101	62 - 131
trans-1,2-Dichloroethene	13	U	250	217		ug/L		87	56 - 136
Trichloroethene	13	U	250	230		ug/L		92	61 - 124
Vinyl chloride	340		250	508		ug/L		67	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176631-3 MS
Matrix: Water
Analysis Batch: 553467

Client Sample ID: MW-70_111522
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*93*		*73 - 120*

Lab Sample ID: 240-176631-3 MSD
Matrix: Water
Analysis Batch: 553467

Client Sample ID: MW-70_111522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	250	228		ug/L		91	56 - 135	0	26
cis-1,2-Dichloroethene	140		250	373		ug/L		94	66 - 128	1	14
Tetrachloroethene	13	U	250	249		ug/L		100	62 - 131	1	20
trans-1,2-Dichloroethene	13	U	250	209		ug/L		84	56 - 136	4	15
Trichloroethene	13	U	250	218		ug/L		87	61 - 124	5	15
Vinyl chloride	340		250	530		ug/L		75	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*83*		*56 - 136*
Toluene-d8 (Surr)	*94*		*78 - 122*
Dibromofluoromethane (Surr)	*90*		*73 - 120*

Lab Sample ID: MB 240-553688/8
Matrix: Water
Analysis Batch: 553688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 10:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 10:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 10:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 10:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/29/22 10:53*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/29/22 10:53*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 10:53*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*11/29/22 10:53*	*1*

Lab Sample ID: LCS 240-553688/5
Matrix: Water
Analysis Batch: 553688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	77 - 123
Tetrachloroethene	20.0	18.2		ug/L		91	76 - 123
trans-1,2-Dichloroethene	20.0	21.0		ug/L		105	75 - 124
Trichloroethene	20.0	17.5		ug/L		87	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-553688/5
Matrix: Water
Analysis Batch: 553688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			20.0	17.9		ug/L		89	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*79*		*73 - 120*

Lab Sample ID: 240-176634-E-5 MS
Matrix: Water
Analysis Batch: 553688

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 135		
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128		
Tetrachloroethene	1.0	U	20.0	14.5		ug/L		72	62 - 131		
trans-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 136		
Trichloroethene	1.0	U	20.0	14.6		ug/L		73	61 - 124		
Vinyl chloride	1.0	U	20.0	16.4		ug/L		82	43 - 157		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*
Dibromofluoromethane (Surr)	*82*		*73 - 120*

Lab Sample ID: 240-176634-F-5 MSD
Matrix: Water
Analysis Batch: 553688

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.6		ug/L		88	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		88	66 - 128	1	14
Tetrachloroethene	1.0	U	20.0	14.2		ug/L		71	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	56 - 136	2	15
Trichloroethene	1.0	U	20.0	14.9		ug/L		74	61 - 124	2	15
Vinyl chloride	1.0	U	20.0	15.7		ug/L		79	43 - 157	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*78*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553480/4
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/27/22 19:42*	*1*

Lab Sample ID: LCS 240-553480/3
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	8.98		ug/L		90	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

Lab Sample ID: 240-176634-I-5 MS
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176634-O-5 MSD
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

GC/MS VOA

Analysis Batch: 553467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176631-1	TRIP BLANK_204	Total/NA	Water	8260D	
240-176631-2	MW-45_111522	Total/NA	Water	8260D	
240-176631-3	MW-70_111522	Total/NA	Water	8260D	
240-176631-4	MW-53_111522	Total/NA	Water	8260D	
240-176631-5	MW-113_111522	Total/NA	Water	8260D	
240-176631-6	MW-199S_111522	Total/NA	Water	8260D	
MB 240-553467/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553467/5	Lab Control Sample	Total/NA	Water	8260D	
240-176631-3 MS	MW-70_111522	Total/NA	Water	8260D	
240-176631-3 MSD	MW-70_111522	Total/NA	Water	8260D	

Analysis Batch: 553480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176631-2	MW-45_111522	Total/NA	Water	8260D SIM	
240-176631-3	MW-70_111522	Total/NA	Water	8260D SIM	
240-176631-4	MW-53_111522	Total/NA	Water	8260D SIM	
240-176631-5	MW-113_111522	Total/NA	Water	8260D SIM	
240-176631-6	MW-199S_111522	Total/NA	Water	8260D SIM	
240-176631-7	DUP-04	Total/NA	Water	8260D SIM	
MB 240-553480/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553480/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176634-I-5 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176634-O-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176631-2	MW-45_111522	Total/NA	Water	8260D	
240-176631-7	DUP-04	Total/NA	Water	8260D	
MB 240-553688/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553688/5	Lab Control Sample	Total/NA	Water	8260D	
240-176634-E-5 MS	Matrix Spike	Total/NA	Water	8260D	
240-176634-F-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: TRIP BLANK_204

Lab Sample ID: 240-176631-1
Matrix: Water
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553467	AJS	EET CAN	11/26/22 13:29

Client Sample ID: MW-45_111522

Lab Sample ID: 240-176631-2
Matrix: Water
Date Collected: 11/15/22 09:40
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		10	553688	TJL1	EET CAN	11/29/22 15:29
Total/NA	Analysis	8260D		1	553467	AJS	EET CAN	11/26/22 19:17
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 01:12

Client Sample ID: MW-70_111522

Lab Sample ID: 240-176631-3
Matrix: Water
Date Collected: 11/15/22 10:30
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		12.5	553467	AJS	EET CAN	11/26/22 17:45
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 01:37

Client Sample ID: MW-53_111522

Lab Sample ID: 240-176631-4
Matrix: Water
Date Collected: 11/15/22 11:20
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553467	AJS	EET CAN	11/26/22 18:08
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 02:03

Client Sample ID: MW-113_111522

Lab Sample ID: 240-176631-5
Matrix: Water
Date Collected: 11/15/22 12:30
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553467	AJS	EET CAN	11/26/22 18:31
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 02:28

Client Sample ID: MW-199S_111522

Lab Sample ID: 240-176631-6
Matrix: Water
Date Collected: 11/15/22 13:35
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553467	AJS	EET CAN	11/26/22 18:54
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 02:53

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Client Sample ID: DUP-04

Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176631-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		25	553688	TJL1	EET CAN	11/29/22 15:53
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 03:19

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176631-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Christian Garrido	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client:
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling:
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_204	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-45_111522	11/15/22	940		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-70_111522		1030		6						6					N	G	X	X	X	X	X	X	X	
MW-53_111522		1120		6						6					N	G	X	X	X	X	X	X	X	
MW-113_111522		1230		6						6					N	G	X	X	X	X	X	X	X	
MW-1995_111522	—	1335		6						6					N	G	X	X	X	X	X	X	X	
DUP-01	11/15/22	—		6						6					N	G	X	X	X	X	X	X	X	

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if sam: ☐ Return to Client ☑ Disposal By La

240-176631 Chain of Custody

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com, Cadena #E203728
Level IV Reporting requested

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Garrido	Arcadis	11/15/22 1430	Novi Cold Storage	Arcadis	11/15/22 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/16/22 1035		EEIA	11/16/22 1035
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEIA	11/16/22 1040	Rachell Hamilton	EETMI	11-17-22 800

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12/1/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176631
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-17-22 Opened on 11-17-22

Cooler unpacked by: Rachelle Haidet

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	Yes (No)
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No (NA)
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y N), # of containers (Y N), and sample type of grab/comp (Y N)?	SME 11-17-22
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes) No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 176631

Eurofins - Canton Sample Receipt Multiple Cooler Form			
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	

DATA VERIFICATION REPORT

December 02, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176631-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-01
Initial Data Verification completed by CADENA: 2022-12-02
Number of Samples:7
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176631-1

		Sample Name:	TRIP BLANK_204				MW-45_111522				MW-70_111522				MW-53_111522				MW-113_111522				MW-199S_111522				DUP-04			
		Lab Sample ID:	2401766311				2401766312				2401766313				2401766314				2401766315				2401766316				2401766317			
		Sample Date:	11/15/2022				11/15/2022				11/15/2022				11/15/2022				11/15/2022				11/15/2022				11/15/2022			
Analyte	Cas No.		Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																														
OSW-8260D																														
1,1-Dichloroethene	75-35-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	25	ug/l	---
cis-1,2-Dichloroethene	156-59-2		ND	1.0	ug/l	---	81	10	ug/l	---	140	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	72	25	ug/l	---
Tetrachloroethene	127-18-4		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	25	ug/l	---
trans-1,2-Dichloroethene	156-60-5		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	25	ug/l	---
Trichloroethene	79-01-6		ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	13	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	25	ug/l	---
Vinyl chloride	75-01-4		ND	1.0	ug/l	---	290	10	ug/l	---	340	13	ug/l	---	1.0	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	260	25	ug/l	---
OSW-8260DSIM																														
1,4-Dioxane	123-91-1						ND	2.0	ug/l	---	1.3	2.0	ug/l	J	ND	2.0	ug/l	---	ND	2.0	ug/l	---	2.2	2.0	ug/l	---	ND	2.0	ug/l	---

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/1/2022 3:41:55 PM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176634-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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12/1/2022 3:41:55 PM

Authorized for release by
Opal Johnson, Project Manager II
Opal.Johnson@et.eurofinsus.com
Designee for
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Job ID: 240-176634-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176634-1

Receipt
The samples were received on 11/17/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1°C and 1.6°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176634-1	TRIP BLANK_186	Water	11/15/22 00:00	11/17/22 08:00
240-176634-2	MW-67_111522	Water	11/15/22 08:50	11/17/22 08:00
240-176634-3	MW-58_111522	Water	11/15/22 12:15	11/17/22 08:00
240-176634-4	MW-46_111522	Water	11/15/22 13:50	11/17/22 08:00
240-176634-5	MW-63_111522	Water	11/15/22 14:50	11/17/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Client Sample ID: TRIP BLANK_186 — Lab Sample ID: 240-176634-1

No Detections.

Client Sample ID: MW-67_111522 — Lab Sample ID: 240-176634-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.7		1.0	0.46	ug/L	1		8260D	Total/NA
Trichloroethene	55		1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: MW-58_111522 — Lab Sample ID: 240-176634-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.5		2.0	0.86	ug/L	1		8260D SIM	Total/NA

Client Sample ID: MW-46_111522 — Lab Sample ID: 240-176634-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.3		2.0	0.86	ug/L	1		8260D SIM	Total/NA
cis-1,2-Dichloroethene	5.6		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.65	J	1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	35		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-63_111522 — Lab Sample ID: 240-176634-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Client Sample ID: TRIP BLANK_186
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176634-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 16:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 16:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 16:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 16:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 16:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*		*11/29/22 16:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 16:16*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/29/22 16:16*	*1*
Dibromofluoromethane (Surr)	*78*		*73 - 120*		*11/29/22 16:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Client Sample ID: MW-67_111522
Date Collected: 11/15/22 08:50
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176634-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 05:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/28/22 05:00*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 16:39	1
cis-1,2-Dichloroethene	**2.7**		1.0	0.46	ug/L			11/29/22 16:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 16:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 16:39	1
Trichloroethene	**55**		1.0	0.44	ug/L			11/29/22 16:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*11/29/22 16:39*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/29/22 16:39*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/29/22 16:39*	*1*
Dibromofluoromethane (Surr)	*83*		*73 - 120*		*11/29/22 16:39*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Client Sample ID: MW-58_111522
Date Collected: 11/15/22 12:15
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176634-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.5		2.0	0.86	ug/L			11/28/22 05:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*		*11/28/22 05:25*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 17:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 17:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 17:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 17:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 17:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 17:02*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/29/22 17:02*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/29/22 17:02*	*1*
Dibromofluoromethane (Surr)	*79*		*73 - 120*		*11/29/22 17:02*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Client Sample ID: MW-46_111522
Date Collected: 11/15/22 13:50
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176634-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**5.3**		2.0	0.86	ug/L			11/28/22 11:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/28/22 11:46*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 17:25	1
cis-1,2-Dichloroethene	**5.6**		1.0	0.46	ug/L			11/29/22 17:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 17:25	1
trans-1,2-Dichloroethene	**0.65**	**J**	1.0	0.51	ug/L			11/29/22 17:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 17:25	1
Vinyl chloride	**35**		1.0	0.45	ug/L			11/29/22 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*		*11/29/22 17:25*	*1*
4-Bromofluorobenzene (Surr)	*93*		*56 - 136*		*11/29/22 17:25*	*1*
Toluene-d8 (Surr)	*94*		*78 - 122*		*11/29/22 17:25*	*1*
Dibromofluoromethane (Surr)	*77*		*73 - 120*		*11/29/22 17:25*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Client Sample ID: MW-63_111522

Date Collected: 11/15/22 14:50
Date Received: 11/17/22 08:00

Lab Sample ID: 240-176634-5

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 03:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*78*		*66 - 120*		*11/28/22 03:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 13:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 13:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 13:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 13:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 13:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 13:34*	*1*
4-Bromofluorobenzene (Surr)	*103*		*56 - 136*		*11/29/22 13:34*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/29/22 13:34*	*1*
Dibromofluoromethane (Surr)	*82*		*73 - 120*		*11/29/22 13:34*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176634-1	TRIP BLANK_186	85	99	99	78
240-176634-2	MW-67_111522	90	103	100	83
240-176634-3	MW-58_111522	92	102	99	79
240-176634-4	MW-46_111522	84	93	94	77
240-176634-5	MW-63_111522	91	103	100	82
240-176634-5 MS	MW-63-MS_111522	88	101	98	82
240-176634-5 MSD	MW-63-MSD_111522	84	100	97	78
LCS 240-553688/5	Lab Control Sample	86	97	95	79
MB 240-553688/8	Method Blank	93	107	101	84

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176634-2	MW-67_111522	76
240-176634-3	MW-58_111522	80
240-176634-4	MW-46_111522	78
240-176634-5	MW-63_111522	78
240-176634-5 MS	MW-63-MS_111522	80
240-176634-5 MSD	MW-63-MSD_111522	80
240-176709-AA-1 MS	Matrix Spike	74
240-176709-AZ-1 MSD	Matrix Spike Duplicate	76
LCS 240-553480/3	Lab Control Sample	76
LCS 240-553482/3	Lab Control Sample	80
MB 240-553480/4	Method Blank	76
MB 240-553482/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553688/8
Matrix: Water
Analysis Batch: 553688

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 10:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 10:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 10:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 10:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 10:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/29/22 10:53*	*1*
4-Bromofluorobenzene (Surr)	*107*		*56 - 136*		*11/29/22 10:53*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 10:53*	*1*
Dibromofluoromethane (Surr)	*84*		*73 - 120*		*11/29/22 10:53*	*1*

Lab Sample ID: LCS 240-553688/5
Matrix: Water
Analysis Batch: 553688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	20.0		ug/L		100	63 - 134
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	77 - 123
Tetrachloroethene	20.0	18.2		ug/L		91	76 - 123
trans-1,2-Dichloroethene	20.0	21.0		ug/L		105	75 - 124
Trichloroethene	20.0	17.5		ug/L		87	70 - 122
Vinyl chloride	20.0	17.9		ug/L		89	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*95*		*78 - 122*
Dibromofluoromethane (Surr)	*79*		*73 - 120*

Lab Sample ID: 240-176634-5 MS
Matrix: Water
Analysis Batch: 553688

Client Sample ID: MW-63-MS_111522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	20.0	18.2		ug/L		91	56 - 135
cis-1,2-Dichloroethene	1.0	U	20.0	17.8		ug/L		89	66 - 128
Tetrachloroethene	1.0	U	20.0	14.5		ug/L		72	62 - 131
trans-1,2-Dichloroethene	1.0	U	20.0	18.6		ug/L		93	56 - 136
Trichloroethene	1.0	U	20.0	14.6		ug/L		73	61 - 124
Vinyl chloride	1.0	U	20.0	16.4		ug/L		82	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176634-5 MS
Matrix: Water
Analysis Batch: 553688

Client Sample ID: MW-63-MS_111522
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	82		73 - 120

Lab Sample ID: 240-176634-5 MSD
Matrix: Water
Analysis Batch: 553688

Client Sample ID: MW-63-MSD_111522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	20.0	17.6		ug/L		88	56 - 135	4	26
cis-1,2-Dichloroethene	1.0	U	20.0	17.5		ug/L		88	66 - 128	1	14
Tetrachloroethene	1.0	U	20.0	14.2		ug/L		71	62 - 131	2	20
trans-1,2-Dichloroethene	1.0	U	20.0	18.3		ug/L		92	56 - 136	2	15
Trichloroethene	1.0	U	20.0	14.9		ug/L		74	61 - 124	2	15
Vinyl chloride	1.0	U	20.0	15.7		ug/L		79	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	84		62 - 137
4-Bromofluorobenzene (Surr)	100		56 - 136
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	78		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553480/4
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/27/22 19:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	76		66 - 120		11/27/22 19:42	1

Lab Sample ID: LCS 240-553480/3
Matrix: Water
Analysis Batch: 553480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	8.98		ug/L		90	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	76		66 - 120

Lab Sample ID: 240-176634-5 MS
Matrix: Water
Analysis Batch: 553480

Client Sample ID: MW-63-MS_111522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	10.2		ug/L		102	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176634-5 MSD — **Client Sample ID: MW-63-MSD_111522**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 553480

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.4		ug/L		104	51 - 153	2	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: MB 240-553482/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 553482

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 07:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/28/22 07:32*	*1*

Lab Sample ID: LCS 240-553482/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 553482

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.77		ug/L		98	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*80*		*66 - 120*

Lab Sample ID: 240-176709-AA-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 553482

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	55		10.0	62.1	4	ug/L		69	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

Lab Sample ID: 240-176709-AZ-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 553482

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	55		10.0	62.4	4	ug/L		72	51 - 153	1	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176709-AZ-1 MSD
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

GC/MS VOA

Analysis Batch: 553480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176634-2	MW-67_111522	Total/NA	Water	8260D SIM	
240-176634-3	MW-58_111522	Total/NA	Water	8260D SIM	
240-176634-5	MW-63_111522	Total/NA	Water	8260D SIM	
MB 240-553480/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553480/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176634-5 MS	MW-63-MS_111522	Total/NA	Water	8260D SIM	
240-176634-5 MSD	MW-63-MSD_111522	Total/NA	Water	8260D SIM	

Analysis Batch: 553482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176634-4	MW-46_111522	Total/NA	Water	8260D SIM	
MB 240-553482/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553482/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176709-AA-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176709-AZ-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176634-1	TRIP BLANK_186	Total/NA	Water	8260D	
240-176634-2	MW-67_111522	Total/NA	Water	8260D	
240-176634-3	MW-58_111522	Total/NA	Water	8260D	
240-176634-4	MW-46_111522	Total/NA	Water	8260D	
240-176634-5	MW-63_111522	Total/NA	Water	8260D	
MB 240-553688/8	Method Blank	Total/NA	Water	8260D	
LCS 240-553688/5	Lab Control Sample	Total/NA	Water	8260D	
240-176634-5 MS	MW-63-MS_111522	Total/NA	Water	8260D	
240-176634-5 MSD	MW-63-MSD_111522	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Client Sample ID: TRIP BLANK_186

Lab Sample ID: 240-176634-1
Matrix: Water
Date Collected: 11/15/22 00:00
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553688	TJL1	EET CAN	11/29/22 16:16

Client Sample ID: MW-67_111522

Lab Sample ID: 240-176634-2
Matrix: Water
Date Collected: 11/15/22 08:50
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553688	TJL1	EET CAN	11/29/22 16:39
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 05:00

Client Sample ID: MW-58_111522

Lab Sample ID: 240-176634-3
Matrix: Water
Date Collected: 11/15/22 12:15
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553688	TJL1	EET CAN	11/29/22 17:02
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 05:25

Client Sample ID: MW-46_111522

Lab Sample ID: 240-176634-4
Matrix: Water
Date Collected: 11/15/22 13:50
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553688	TJL1	EET CAN	11/29/22 17:25
Total/NA	Analysis	8260D SIM		1	553482	CS	EET CAN	11/28/22 11:46

Client Sample ID: MW-63_111522

Lab Sample ID: 240-176634-5
Matrix: Water
Date Collected: 11/15/22 14:50
Date Received: 11/17/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553688	TJL1	EET CAN	11/29/22 13:34
Total/NA	Analysis	8260D SIM		1	553480	CS	EET CAN	11/28/22 03:44

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176634-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN 190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:	10 day		Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_186	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-67_111522	11/15/22	0850		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-58_111522	11/15/22	1215		6						6					N	G	X	X	X	X	X	X	X	
MW-46_111522	11/15/22	1350		6						6					N	G	X	X	X	X	X	X	X	
MW-63_111522	11/15/22	1450		6						6					N	G	X	X	X	X	X	X	X	
MW-63-MS_111522	11/15/22	1450		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD
MW-63-MSD_111522	11/15/22	1450		6						6					N	G	X	X	X	X	X	X	X	Run MS/MSD

240-176634 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples): ☐ Return to Client ☑ Disposal By Lab

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/15/22 1700	Novi Cold Storage	Arcadis	11/15/22 1700
	Arcadis	11/16/22 1035		EETA	11/16/22 1035
	EETA	11/16/22 10:40	Rachel Handel	EETA	11-17-22 800

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176634
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-17-22 Opened on 11-17-22

Cooler unpacked by: Rachelle Haidet

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	Yes (No)
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No (NA)
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)?	Yes (No)
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y N), # of containers (Y N), and sample type of grab/comp (Y N)	(Yes) No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA) pH Strip Lot# HC286797
14. Were VOAs on the COC?	(Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G	(Yes) No
17. Was a LL Hg or Me Hg trip blank present?	Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Date 11-17-22

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Login # : 176634

Eurofins - Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-13 IR-15	1.1	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15	1.6	1.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-13 IR-15			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

DATA VERIFICATION REPORT

REVISED REPORT: December 12, 2022 REVISION SUMMARY: DVR revised to include ARS table.

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176634-1
Sample date: 2022-11-15
Report received by CADENA: 2022-12-01
Initial Data Verification completed by CADENA: 2022-12-02
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176634-1

	Sample Name:	TRIP BLANK_186				MW-67_111522				MW-58_111522				MW-46_111522				MW-63_111522			
	Lab Sample ID:	2401766341				2401766342				2401766343				2401766344				2401766345			
	Sample Date:	11/15/2022				11/15/2022				11/15/2022				11/15/2022				11/15/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	2.7	1.0	ug/l	---	ND	1.0	ug/l	---	5.6	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.65	1.0	ug/l	J	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	55	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	35	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	2.5	2.0	ug/l	---	5.3	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/30/2022 3:45:50 PM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176711-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/30/2022 3:45:50 PM

Authorized for release by
Opal Johnson, Project Manager II
Opal.Johnson@et.eurofinsus.com
Designee for
Michael DelMonico, Project Manager I
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Table of Contents

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176711-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176711-1

Receipt
The samples were received on 11/18/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

GC/MS VOA
Method 8260D_SIM: The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: MW-55D_111622 (240-176711-2) and MW-55_111622 (240-176711-3). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176711-1	TRIP BLANK_174	Water	11/16/22 00:00	11/18/22 08:00
240-176711-2	MW-55D_111622	Water	11/16/22 08:50	11/18/22 08:00
240-176711-3	MW-55_111622	Water	11/16/22 10:10	11/18/22 08:00
240-176711-4	MW-48R_111622	Water	11/16/22 11:25	11/18/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Client Sample ID: TRIP BLANK_174 — Lab Sample ID: 240-176711-1

No Detections.

Client Sample ID: MW-55D_111622 — Lab Sample ID: 240-176711-2

No Detections.

Client Sample ID: MW-55_111622 — Lab Sample ID: 240-176711-3

No Detections.

Client Sample ID: MW-48R_111622 — Lab Sample ID: 240-176711-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	8.6		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.61	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Client Sample ID: TRIP BLANK_174
Date Collected: 11/16/22 00:00
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176711-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 15:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 15:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 15:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 15:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 15:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*		*11/28/22 15:19*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/28/22 15:19*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/28/22 15:19*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 15:19*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Client Sample ID: MW-55D_111622
Date Collected: 11/16/22 08:50
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176711-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			11/28/22 16:25	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*		*11/28/22 16:25*	*2*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 15:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 15:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 15:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 15:44	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 15:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 15:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*62 - 137*		*11/28/22 15:44*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/28/22 15:44*	*1*
Toluene-d8 (Surr)	*98*		*78 - 122*		*11/28/22 15:44*	*1*
Dibromofluoromethane (Surr)	*89*		*73 - 120*		*11/28/22 15:44*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Client Sample ID: MW-55_111622
Date Collected: 11/16/22 10:10
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176711-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			11/28/22 16:51	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 120*		*11/28/22 16:51*	*2*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 16:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 16:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 16:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 16:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 16:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/28/22 16:09*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/28/22 16:09*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 16:09*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 16:09*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Client Sample ID: MW-48R_111622
Date Collected: 11/16/22 11:25
Date Received: 11/18/22 08:00

Lab Sample ID: 240-176711-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	8.6		2.0	0.86	ug/L			11/28/22 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*79*		*66 - 120*		*11/28/22 17:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 16:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 16:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 16:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 16:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 16:34	1
Vinyl chloride	0.61	J	1.0	0.45	ug/L			11/28/22 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*62 - 137*		*11/28/22 16:34*	*1*
4-Bromofluorobenzene (Surr)	*88*		*56 - 136*		*11/28/22 16:34*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/28/22 16:34*	*1*
Dibromofluoromethane (Surr)	*88*		*73 - 120*		*11/28/22 16:34*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176711-1	TRIP BLANK_174	97	88	100	90
240-176711-2	MW-55D_111622	98	90	98	89
240-176711-3	MW-55_111622	99	88	99	90
240-176711-4	MW-48R_111622	99	88	101	88
240-176712-B-3 MS	Matrix Spike	97	91	98	91
240-176712-B-3 MSD	Matrix Spike Duplicate	97	92	98	93
LCS 240-553589/4	Lab Control Sample	92	91	97	94
MB 240-553589/7	Method Blank	96	90	99	90

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176709-AA-1 MS	Matrix Spike	74
240-176709-AZ-1 MSD	Matrix Spike Duplicate	76
240-176711-2	MW-55D_111622	76
240-176711-3	MW-55_111622	77
240-176711-4	MW-48R_111622	79
LCS 240-553482/3	Lab Control Sample	80
MB 240-553482/4	Method Blank	79

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553589/7

Matrix: Water
Analysis Batch: 553589

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/28/22 14:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/28/22 14:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/28/22 14:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/28/22 14:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/28/22 14:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*62 - 137*		*11/28/22 14:54*	*1*
4-Bromofluorobenzene (Surr)	*90*		*56 - 136*		*11/28/22 14:54*	*1*
Toluene-d8 (Surr)	*99*		*78 - 122*		*11/28/22 14:54*	*1*
Dibromofluoromethane (Surr)	*90*		*73 - 120*		*11/28/22 14:54*	*1*

Lab Sample ID: LCS 240-553589/4

Matrix: Water
Analysis Batch: 553589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	22.9		ug/L		92	63 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
Tetrachloroethene	25.0	24.7		ug/L		99	76 - 123
trans-1,2-Dichloroethene	25.0	23.6		ug/L		95	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	12.5	10.1		ug/L		81	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*97*		*78 - 122*
Dibromofluoromethane (Surr)	*94*		*73 - 120*

Lab Sample ID: 240-176712-B-3 MS

Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	10	U	250	207		ug/L		83	56 - 135
cis-1,2-Dichloroethene	370		250	599		ug/L		91	66 - 128
Tetrachloroethene	10	U	250	207		ug/L		83	62 - 131
trans-1,2-Dichloroethene	110		250	358		ug/L		98	56 - 136
Trichloroethene	590		250	885	E	ug/L		118	61 - 124
Vinyl chloride	10	U	125	91.1		ug/L		73	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*62 - 137*
4-Bromofluorobenzene (Surr)	*91*		*56 - 136*
Toluene-d8 (Surr)	*98*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176712-B-3 MS
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	91		73 - 120

Lab Sample ID: 240-176712-B-3 MSD
Matrix: Water
Analysis Batch: 553589

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	10	U	250	229		ug/L		91	56 - 135	10	26
cis-1,2-Dichloroethene	370		250	603		ug/L		93	66 - 128	1	14
Tetrachloroethene	10	U	250	217		ug/L		87	62 - 131	5	20
trans-1,2-Dichloroethene	110		250	356		ug/L		97	56 - 136	1	15
Trichloroethene	590		250	816	E	ug/L		90	61 - 124	8	15
Vinyl chloride	10	U	125	104		ug/L		83	43 - 157	13	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		62 - 137
4-Bromofluorobenzene (Surr)	92		56 - 136
Toluene-d8 (Surr)	98		78 - 122
Dibromofluoromethane (Surr)	93		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553482/4
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 07:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	79		66 - 120		11/28/22 07:32	1

Lab Sample ID: LCS 240-553482/3
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.77		ug/L		98	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	80		66 - 120

Lab Sample ID: 240-176709-AA-1 MS
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	55		10.0	62.1	4	ug/L		69	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*74*		*66 - 120*

Lab Sample ID: 240-176709-AZ-1 MSD
Matrix: Water
Analysis Batch: 553482

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	55		10.0	62.4	4	ug/L		72	51 - 153	1	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*76*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

GC/MS VOA

Analysis Batch: 553482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176711-2	MW-55D_111622	Total/NA	Water	8260D SIM	
240-176711-3	MW-55_111622	Total/NA	Water	8260D SIM	
240-176711-4	MW-48R_111622	Total/NA	Water	8260D SIM	
MB 240-553482/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553482/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176709-AA-1 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176709-AZ-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176711-1	TRIP BLANK_174	Total/NA	Water	8260D	
240-176711-2	MW-55D_111622	Total/NA	Water	8260D	
240-176711-3	MW-55_111622	Total/NA	Water	8260D	
240-176711-4	MW-48R_111622	Total/NA	Water	8260D	
MB 240-553589/7	Method Blank	Total/NA	Water	8260D	
LCS 240-553589/4	Lab Control Sample	Total/NA	Water	8260D	
240-176712-B-3 MS	Matrix Spike	Total/NA	Water	8260D	
240-176712-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Client Sample ID: TRIP BLANK_174
Lab Sample ID: 240-176711-1
Date Collected: 11/16/22 00:00
Matrix: Water
Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 15:19

Client Sample ID: MW-55D_111622
Lab Sample ID: 240-176711-2
Date Collected: 11/16/22 08:50
Matrix: Water
Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 15:44
Total/NA	Analysis	8260D SIM		2	553482	CS	EET CAN	11/28/22 16:25

Client Sample ID: MW-55_111622
Lab Sample ID: 240-176711-3
Date Collected: 11/16/22 10:10
Matrix: Water
Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 16:09
Total/NA	Analysis	8260D SIM		2	553482	CS	EET CAN	11/28/22 16:51

Client Sample ID: MW-48R_111622
Lab Sample ID: 240-176711-4
Date Collected: 11/16/22 11:25
Matrix: Water
Date Received: 11/18/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553589	LEE	EET CAN	11/28/22 16:34
Total/NA	Analysis	8260D SIM		1	553482	CS	EET CAN	11/28/22 17:16

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176711-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Chain of Custody Record

1/8/18

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

TestAmerica Laboratories, Inc.

Client Contact	Regulatory program: DW NPDES RCRA Other			
Company Name: Arcadis	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Sommer Guy	TAT if different from below: 10 day ✓ 2 weeks; 3 weeks; 1 week; 2 days; 1 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30146655.401.03	Shipping/Tracking No:			Job/SDG No:
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_174	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-55D_111622	11/16/22	0850		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-55_111622	11/16/22	1010		6						6					N	G	X	X	X	X	X	X	X	
MW-48R_111622	11/16/22	1125		6						6					N	G	X	X	X	X	X	X	X	

240-176711 Chain of Custody

Possible Hazard Identification: ✓ Non-Hazard; Flammable; Skin Irritant; Poison B; Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return to Client; ✓ Disposal By Lab; Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Sommer Guy	Arcadis	11/16/22 1220	Novi Cold Storage	Arcadis	11/16/22 1720
	ARCADIS	11/17/22 0935		EEA	11/17/22 0935
	EEA	11/17/22 941	Received in Laboratory by: M. D.	EEC	11/18/22 8:00

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Eurofins - Canton Sample Receipt Form/Narrative **Login # :** _____
Barberton Facility

Client ARCADIS Site Name _____ Cooler unpacked by: M. D. D.

Cooler Received on 11/18/22 Opened on 11/18/22

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # (EC) Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	(No)
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(N)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #0004201G	(Yes)	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

DATA VERIFICATION REPORT

December 01, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176711-1
Sample date: 2022-11-16
Report received by CADENA: 2022-11-30
Initial Data Verification completed by CADENA: 2022-12-01
Number of Samples:4
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176711-1

		Sample Name:	TRIP BLANK_174				MW-55D_111622				MW-55_111622				MW-48R_111622			
		Lab Sample ID:	2401767111				2401767112				2401767113				2401767114			
		Sample Date:	11/16/2022				11/16/2022				11/16/2022				11/16/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	0.61	1.0	ug/l	J
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	4.0	ug/l	---	ND	4.0	ug/l	---	8.6	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 12/6/2022 2:51:35 PM

JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176843-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

myEOL

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Job ID: 240-176843-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176843-1

Comments
No additional comments.

Receipt
The samples were received on 11/19/2022 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176843-1	TRIP BLANK_162	Water	11/17/22 00:00	11/19/22 08:00
240-176843-2	MW-47_111722	Water	11/17/22 11:55	11/19/22 08:00
240-176843-3	MW-68_111722	Water	11/17/22 13:10	11/19/22 08:00
240-176843-4	MW-218S_111722	Water	11/17/22 14:10	11/19/22 08:00
240-176843-5	DUP-03	Water	11/17/22 00:00	11/19/22 08:00

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Client Sample ID: TRIP BLANK_162 — Lab Sample ID: 240-176843-1

No Detections.

Client Sample ID: MW-47_111722 — Lab Sample ID: 240-176843-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.9		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.96	J	1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	8.0		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-68_111722 — Lab Sample ID: 240-176843-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	25		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	2.9		1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	27		1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-218S_111722 — Lab Sample ID: 240-176843-4

No Detections.

Client Sample ID: DUP-03 — Lab Sample ID: 240-176843-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.8		1.0	0.46	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.74	J	1.0	0.51	ug/L	1		8260D	Total/NA
Vinyl chloride	5.4		1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Client Sample ID: TRIP BLANK_162

Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176843-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 09:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 09:00	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 09:00	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 09:00	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 09:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*62 - 137*		*11/29/22 09:00*	*1*
4-Bromofluorobenzene (Surr)	*96*		*56 - 136*		*11/29/22 09:00*	*1*
Toluene-d8 (Surr)	*100*		*78 - 122*		*11/29/22 09:00*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*11/29/22 09:00*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Client Sample ID: MW-47_111722
Date Collected: 11/17/22 11:55
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176843-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/29/22 01:24*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 12:23	1
cis-1,2-Dichloroethene	**5.9**		1.0	0.46	ug/L			11/29/22 12:23	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 12:23	1
trans-1,2-Dichloroethene	**0.96**	**J**	1.0	0.51	ug/L			11/29/22 12:23	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 12:23	1
Vinyl chloride	**8.0**		1.0	0.45	ug/L			11/29/22 12:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 12:23*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 12:23*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 12:23*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 12:23*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Client Sample ID: MW-68_111722
Date Collected: 11/17/22 13:10
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176843-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 04:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 120*		*11/29/22 04:38*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 12:49	1
cis-1,2-Dichloroethene	**25**		1.0	0.46	ug/L			11/29/22 12:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 12:49	1
trans-1,2-Dichloroethene	**2.9**		1.0	0.51	ug/L			11/29/22 12:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 12:49	1
Vinyl chloride	**27**		1.0	0.45	ug/L			11/29/22 12:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 12:49*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*11/29/22 12:49*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 12:49*	*1*
Dibromofluoromethane (Surr)	*100*		*73 - 120*		*11/29/22 12:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Client Sample ID: MW-218S_111722
Date Collected: 11/17/22 14:10
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176843-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 07:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*		*11/29/22 07:13*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 13:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 13:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 13:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 13:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 13:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 13:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/29/22 13:14*	*1*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*		*11/29/22 13:14*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 13:14*	*1*
Dibromofluoromethane (Surr)	*101*		*73 - 120*		*11/29/22 13:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Client Sample ID: DUP-03
Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Lab Sample ID: 240-176843-5
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 07:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*		*11/29/22 07:37*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 13:39	1
cis-1,2-Dichloroethene	**4.8**		1.0	0.46	ug/L			11/29/22 13:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 13:39	1
trans-1,2-Dichloroethene	**0.74**	**J**	1.0	0.51	ug/L			11/29/22 13:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 13:39	1
Vinyl chloride	**5.4**		1.0	0.45	ug/L			11/29/22 13:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*11/29/22 13:39*	*1*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*		*11/29/22 13:39*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*11/29/22 13:39*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 120*		*11/29/22 13:39*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176843-1	TRIP BLANK_162	86	96	100	95
240-176843-2	MW-47_111722	91	99	103	99
240-176843-3	MW-68_111722	92	97	103	100
240-176843-4	MW-218S_111722	93	101	103	101
240-176843-5	DUP-03	92	100	103	99
240-176843-5 MS	DUP-03	85	99	104	99
240-176843-5 MSD	DUP-03	83	98	104	96
LCS 240-553659/3	Lab Control Sample	84	101	105	97
MB 240-553659/4	Method Blank	91	99	101	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176838-B-2 MS	Matrix Spike	98
240-176838-B-2 MSD	Matrix Spike Duplicate	102
240-176843-2	MW-47_111722	106
240-176843-3	MW-68_111722	103
240-176843-4	MW-218S_111722	104
240-176843-5	DUP-03	99
240-176901-I-2 MS	Matrix Spike	99
240-176901-O-2 MSD	Matrix Spike Duplicate	104
LCS 240-553632/3	Lab Control Sample	96
LCS 240-553633/3	Lab Control Sample	109
MB 240-553632/4	Method Blank	102
MB 240-553633/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-553659/4
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/29/22 06:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/29/22 06:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/29/22 06:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/29/22 06:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/29/22 06:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*11/29/22 06:53*	*1*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*		*11/29/22 06:53*	*1*
Toluene-d8 (Surr)	*101*		*78 - 122*		*11/29/22 06:53*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*11/29/22 06:53*	*1*

Lab Sample ID: LCS 240-553659/3
Matrix: Water
Analysis Batch: 553659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	27.3		ug/L		109	63 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		97	77 - 123
Tetrachloroethene	25.0	25.0		ug/L		100	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.4		ug/L		94	70 - 122
Vinyl chloride	25.0	25.3		ug/L		101	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*101*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*97*		*73 - 120*

Lab Sample ID: 240-176843-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: DUP-03
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	28.4		ug/L		114	56 - 135
cis-1,2-Dichloroethene	4.8		25.0	32.9		ug/L		112	66 - 128
Tetrachloroethene	1.0	U	25.0	24.7		ug/L		99	62 - 131
trans-1,2-Dichloroethene	0.74	J	25.0	24.1		ug/L		93	56 - 136
Trichloroethene	1.0	U	25.0	23.0		ug/L		92	61 - 124
Vinyl chloride	5.4		25.0	32.1		ug/L		107	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*99*		*56 - 136*
Toluene-d8 (Surr)	*104*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176843-5 MS
Matrix: Water
Analysis Batch: 553659

Client Sample ID: DUP-03
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	99		73 - 120

Lab Sample ID: 240-176843-5 MSD
Matrix: Water
Analysis Batch: 553659

Client Sample ID: DUP-03
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	27.2		ug/L		109	56 - 135	4	26
cis-1,2-Dichloroethene	4.8		25.0	31.3		ug/L		106	66 - 128	5	14
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131	2	20
trans-1,2-Dichloroethene	0.74	J	25.0	23.2		ug/L		90	56 - 136	4	15
Trichloroethene	1.0	U	25.0	22.6		ug/L		90	61 - 124	2	15
Vinyl chloride	5.4		25.0	30.9		ug/L		102	43 - 157	4	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		62 - 137
4-Bromofluorobenzene (Surr)	98		56 - 136
Toluene-d8 (Surr)	104		78 - 122
Dibromofluoromethane (Surr)	96		73 - 120

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553632/4
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/28/22 16:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		66 - 120		11/28/22 16:04	1

Lab Sample ID: LCS 240-553632/3
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	10.0	9.87		ug/L		99	80 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	96		66 - 120

Lab Sample ID: 240-176838-B-2 MS
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.0	U	10.0	9.65		ug/L		96	51 - 153

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*98*		*66 - 120*

Lab Sample ID: 240-176838-B-2 MSD
Matrix: Water
Analysis Batch: 553632

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	9.68		ug/L		97	51 - 153	0	16

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.98		ug/L		100	80 - 122		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-I-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153		

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

GC/MS VOA

Analysis Batch: 553632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176843-2	MW-47_111722	Total/NA	Water	8260D SIM	
MB 240-553632/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553632/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176838-B-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176838-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176843-3	MW-68_111722	Total/NA	Water	8260D SIM	
240-176843-4	MW-218S_111722	Total/NA	Water	8260D SIM	
240-176843-5	DUP-03	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176901-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 553659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176843-1	TRIP BLANK_162	Total/NA	Water	8260D	
240-176843-2	MW-47_111722	Total/NA	Water	8260D	
240-176843-3	MW-68_111722	Total/NA	Water	8260D	
240-176843-4	MW-218S_111722	Total/NA	Water	8260D	
240-176843-5	DUP-03	Total/NA	Water	8260D	
MB 240-553659/4	Method Blank	Total/NA	Water	8260D	
LCS 240-553659/3	Lab Control Sample	Total/NA	Water	8260D	
240-176843-5 MS	DUP-03	Total/NA	Water	8260D	
240-176843-5 MSD	DUP-03	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Client Sample ID: TRIP BLANK_162

Lab Sample ID: 240-176843-1
Matrix: Water
Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 09:00

Client Sample ID: MW-47_111722

Lab Sample ID: 240-176843-2
Matrix: Water
Date Collected: 11/17/22 11:55
Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 12:23
Total/NA	Analysis	8260D SIM		1	553632	CS	EET CAN	11/29/22 01:24

Client Sample ID: MW-68_111722

Lab Sample ID: 240-176843-3
Matrix: Water
Date Collected: 11/17/22 13:10
Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 12:49
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 04:38

Client Sample ID: MW-218S_111722

Lab Sample ID: 240-176843-4
Matrix: Water
Date Collected: 11/17/22 14:10
Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 13:14
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 07:13

Client Sample ID: DUP-03

Lab Sample ID: 240-176843-5
Matrix: Water
Date Collected: 11/17/22 00:00
Date Received: 11/19/22 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	553659	CS	EET CAN	11/29/22 13:39
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 07:37

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176843-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day; 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
1	TRIP BLANK_162	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
2	MW-47_111722	11/17/22	1155		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
3	MW-68_111722	11/17/22	1310		6						6					N	G	X	X	X	X	X	X	X	
4	MW-218S_111722	11/17/22	1410		6						6					N	G	X	X	X	X	X	X	X	
5	DUP-03	11/17/22	—		6						6					N	G	X	X	X	X	X	X	X	

240-176843 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

	Company	Date/Time		Company	Date/Time
Relinquished by: Sommer Guy	Arcadis	11/17/22 1510	Received by: NOVA Cold Storage	Arcadis	11/17/22 1510
Relinquished by:	ARCADIS	11/18/22 0945	Received by:	EETA	11/18/22 0945
Relinquished by:	EETA	11-18-22 1002	Received in Laboratory by:	EEC	11/19/22 8:00

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative **Login # :** 176843
Barberton Facility

Client ARCADIS Site Name

Cooler Received on 11/19/22 Opened on 11/19/22

Cooler unpacked by: M. D. D.

FedEx: 1st Grd Exp UPS FAS (Clipper) Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 5 Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? Yes (No)
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Yes) 11-21-22
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC286797**
14. Were VOAs on the COC? (Yes) No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes (No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201G (Yes) No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

DATA VERIFICATION REPORT

December 06, 2022

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176843-1
Sample date: 2022-11-17
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-06
Number of Samples:5
Sample Matrices:Water
Test Categories:GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, MS/MSD Recovery, MS/MSD RPD, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176843-1

	Sample Name:	TRIP BLANK_162				MW-47_111722				MW-68_111722				MW-218S_111722				DUP-03			
	Lab Sample ID:	2401768431				2401768432				2401768433				2401768434				2401768435			
	Sample Date:	11/17/2022				11/17/2022				11/17/2022				11/17/2022				11/17/2022			
Analyte	**Cas No.**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**	**Result**	**Report Limit**	**Units**	**Valid Qualifier**
GC/MS VOC																					
OSW-8260D																					
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	5.9	1.0	ug/l	---	25	1.0	ug/l	---	ND	1.0	ug/l	---	4.8	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	0.96	1.0	ug/l	J	2.9	1.0	ug/l	---	ND	1.0	ug/l	---	0.74	1.0	ug/l	J
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	8.0	1.0	ug/l	---	27	1.0	ug/l	---	ND	1.0	ug/l	---	5.4	1.0	ug/l	---
OSW-8260DSIM																					
1,4-Dioxane	123-91-1					ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176899-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176899-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176899-1

Comments
No additional comments.

Receipt
The samples were received on 11/22/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2º C.

GC/MS VOA
Method 8260D SIM: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-56_111822 (240-176899-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176899-1	TRIP BLANK_182	Water	11/18/22 00:00	11/22/22 09:40
240-176899-2	MW-56_111822	Water	11/18/22 10:20	11/22/22 09:40
240-176899-3	MW-32_111822	Water	11/18/22 11:30	11/22/22 09:40
240-176899-4	MW-39_111822	Water	11/18/22 12:30	11/22/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Client Sample ID: TRIP BLANK_182 — Lab Sample ID: 240-176899-1

No Detections.

Client Sample ID: MW-56_111822 — Lab Sample ID: 240-176899-2

No Detections.

Client Sample ID: MW-32_111822 — Lab Sample ID: 240-176899-3

No Detections.

Client Sample ID: MW-39_111822 — Lab Sample ID: 240-176899-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Client Sample ID: TRIP BLANK_182

Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 02:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 02:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 02:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 02:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 02:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 02:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*62 - 137*		*12/01/22 02:40*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 02:40*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*12/01/22 02:40*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*12/01/22 02:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Client Sample ID: MW-56_111822
Date Collected: 11/18/22 10:20
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	4.0	U	4.0	1.7	ug/L			11/29/22 11:39	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/29/22 11:39*	*2*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 13:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 13:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 13:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 13:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 13:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 13:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 13:16*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 13:16*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*12/01/22 13:16*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 13:16*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Client Sample ID: MW-32_111822
Date Collected: 11/18/22 11:30
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-3
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 12:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 12:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 13:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 13:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 13:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 13:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 13:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*62 - 137*		*12/01/22 13:42*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*12/01/22 13:42*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*12/01/22 13:42*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 13:42*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Client Sample ID: MW-39_111822
Date Collected: 11/18/22 12:30
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 12:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 12:28*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 14:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 14:07	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 14:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 14:07	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 14:07	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*12/01/22 14:07*	*1*
4-Bromofluorobenzene (Surr)	*95*		*56 - 136*		*12/01/22 14:07*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*12/01/22 14:07*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*12/01/22 14:07*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176899-1	TRIP BLANK_182	88	97	102	96
240-176899-2	MW-56_111822	89	97	104	95
240-176899-3	MW-32_111822	92	98	104	95
240-176899-4	MW-39_111822	90	95	102	93
240-176901-H-2 MS	Matrix Spike	83	97	105	96
240-176901-N-2 MSD	Matrix Spike Duplicate	83	97	105	96
240-176993-F-1 MS	Matrix Spike	84	97	106	95
240-176993-I-1 MSD	Matrix Spike Duplicate	83	97	105	95
LCS 240-554038/4	Lab Control Sample	85	100	105	99
LCS 240-554040/3	Lab Control Sample	84	98	105	95
MB 240-554038/5	Method Blank	93	102	106	103
MB 240-554040/4	Method Blank	89	97	103	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176899-2	MW-56_111822	105
240-176899-3	MW-32_111822	102
240-176899-4	MW-39_111822	102
240-176901-I-2 MS	Matrix Spike	99
240-176901-O-2 MSD	Matrix Spike Duplicate	104
LCS 240-553633/3	Lab Control Sample	109
MB 240-553633/4	Method Blank	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-554038/5
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/22 23:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/22 23:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/22 23:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/22 23:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/30/22 23:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/30/22 23:42*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/30/22 23:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/30/22 23:42*	*1*

Lab Sample ID: LCS 240-554038/4
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	23.4		ug/L		94	77 - 123
Tetrachloroethene	25.0	25.2		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.2		ug/L		93	70 - 122
Vinyl chloride	25.0	21.6		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.9		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	23.8		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	0.75	J	25.0	20.3		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176901-H-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: 240-176901-N-2 MSD
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	28.9		ug/L		116	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	24.6		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	56 - 136	1	15
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124	4	15
Vinyl chloride	0.75	J	25.0	20.5		ug/L		79	43 - 157	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	83		62 - 137
4-Bromofluorobenzene (Surr)	97		56 - 136
Toluene-d8 (Surr)	105		78 - 122
Dibromofluoromethane (Surr)	96		73 - 120

Lab Sample ID: MB 240-554040/4
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 11:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		62 - 137		12/01/22 11:34	1
4-Bromofluorobenzene (Surr)	97		56 - 136		12/01/22 11:34	1
Toluene-d8 (Surr)	103		78 - 122		12/01/22 11:34	1
Dibromofluoromethane (Surr)	95		73 - 120		12/01/22 11:34	1

Lab Sample ID: LCS 240-554040/3
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.0		ug/L		116	63 - 134
cis-1,2-Dichloroethene	25.0	22.3		ug/L		89	77 - 123
Tetrachloroethene	25.0	24.5		ug/L		98	76 - 123
trans-1,2-Dichloroethene	25.0	22.0		ug/L		88	75 - 124
Trichloroethene	25.0	21.4		ug/L		86	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-554040/3
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	19.7		ug/L		79	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176993-F-1 MS
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176993-I-1 MSD
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrachloroethene	1.0	U	25.0	23.2		ug/L		93	62 - 131	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.98		ug/L		100	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-I-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-O-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

GC/MS VOA

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176899-2	MW-56_111822	Total/NA	Water	8260D SIM	
240-176899-3	MW-32_111822	Total/NA	Water	8260D SIM	
240-176899-4	MW-39_111822	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-I-2 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-176901-O-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 554038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176899-1	TRIP BLANK_182	Total/NA	Water	8260D	
MB 240-554038/5	Method Blank	Total/NA	Water	8260D	
LCS 240-554038/4	Lab Control Sample	Total/NA	Water	8260D	
240-176901-H-2 MS	Matrix Spike	Total/NA	Water	8260D	
240-176901-N-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 554040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176899-2	MW-56_111822	Total/NA	Water	8260D	
240-176899-3	MW-32_111822	Total/NA	Water	8260D	
240-176899-4	MW-39_111822	Total/NA	Water	8260D	
MB 240-554040/4	Method Blank	Total/NA	Water	8260D	
LCS 240-554040/3	Lab Control Sample	Total/NA	Water	8260D	
240-176993-F-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-176993-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Client Sample ID: TRIP BLANK_182
Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 02:40

Client Sample ID: MW-56_111822
Date Collected: 11/18/22 10:20
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554040	CS	EET CAN	12/01/22 13:16
Total/NA	Analysis	8260D SIM		2	553633	CS	EET CAN	11/29/22 11:39

Client Sample ID: MW-32_111822
Date Collected: 11/18/22 11:30
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554040	CS	EET CAN	12/01/22 13:42
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 12:04

Client Sample ID: MW-39_111822
Date Collected: 11/18/22 12:30
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176899-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554040	CS	EET CAN	12/01/22 14:07
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 12:28

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176899-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton --- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	of COCs
Address: 28550 Cabot Drive, Suite 500	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		For lab use only
City/State/Zip: Novi, MI, 48377	Sampler Name: Sommer Guy	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day — 10 day		Walk-in client
Phone: 248-994-2240	Method of Shipment/Carrier:			Lab sampling
Project Name: Ford LTP On-Site	Shipping/Tracking No:			Job/SDG No:
Project Number: 30146655.401.03				
PO # 30146655.401.03				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK_182	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
MW-56_111822	11/18/22	1020		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
MW-32_111822	11/18/22	1130		6						6					N	G	X	X	X	X	X	X	X	1
MW-39_111822	11/18/22	1230		6						6					N	G	X	X	X	X	X	X	X	1

240-176899 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ☐ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sommer Guy	Arcadis	11/18/22 1320	Novi Cold Storage	Arcadis	11/18/22 1320
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/22		EETA	11/21/22 0840
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EETA	11/21/22		EETMC	11-22-22 940

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12/6/2022

Eurofins - Canton Sample Receipt Form/Narrative Login # : 176844
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-22-22 Opened on 11-22-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 3.2 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62020	Yes	No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	No

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WT-NC-099

DATA VERIFICATION REPORT

REVISED REPORT: December 12, 2022 REVISION SUMMARY: DVR revised to include ARS table.

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176899-1
Sample date: 2022-11-18
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-07
Number of Samples:4
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176899-1

		Sample Name:	TRIP BLANK_182				MW-56_111822				MW-32_111822				MW-39_111822			
		Lab Sample ID:	2401768991				2401768992				2401768993				2401768994			
		Sample Date:	11/18/2022				11/18/2022				11/18/2022				11/18/2022			
Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																	
OSW-8260D																	
1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
Vinyl chloride	75-01-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
OSW-8260DSIM																	
1,4-Dioxane	123-91-1					ND	4.0	ug/l	---	ND	2.0	ug/l	---	ND	2.0	ug/l	---

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kristoffer Hinskey
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

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JOB DESCRIPTION

Ford LTP - On Site

JOB NUMBER

240-176901-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

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Authorization

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176901-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176901-1

Receipt
The samples were received on 11/22/2022 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.2°C

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
8260D SIM	Volatile Organic Compounds (GC/MS)	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176901-1	TRIP BLANK_183	Water	11/18/22 00:00	11/22/22 09:40
240-176901-2	MW-62_111822	Water	11/18/22 10:00	11/22/22 09:40
240-176901-3	MW-54S_111822	Water	11/18/22 10:55	11/22/22 09:40
240-176901-4	MW-54_111822	Water	11/18/22 11:40	11/22/22 09:40

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Client Sample ID: TRIP BLANK_183 — Lab Sample ID: 240-176901-1

No Detections.

Client Sample ID: MW-62_111822 — Lab Sample ID: 240-176901-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.1		2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.75	J	1.0	0.45	ug/L	1		8260D	Total/NA

Client Sample ID: MW-54S_111822 — Lab Sample ID: 240-176901-3

No Detections.

Client Sample ID: MW-54_111822 — Lab Sample ID: 240-176901-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6	J	2.0	0.86	ug/L	1		8260D SIM	Total/NA
Vinyl chloride	0.67	J	1.0	0.45	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Client Sample ID: TRIP BLANK_183

Date Collected: 11/18/22 00:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176901-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 03:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 03:05	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 03:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 03:05	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 03:05	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 03:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*62 - 137*		*12/01/22 03:05*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 03:05*	*1*
Toluene-d8 (Surr)	*102*		*78 - 122*		*12/01/22 03:05*	*1*
Dibromofluoromethane (Surr)	*96*		*73 - 120*		*12/01/22 03:05*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Client Sample ID: MW-62_111822
Date Collected: 11/18/22 10:00
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176901-2
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.1		2.0	0.86	ug/L			11/29/22 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 120*		*11/29/22 12:52*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 08:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 08:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 08:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 08:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 08:36	1
Vinyl chloride	0.75	J	1.0	0.45	ug/L			12/01/22 08:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*62 - 137*		*12/01/22 08:36*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 08:36*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*12/01/22 08:36*	*1*
Dibromofluoromethane (Surr)	*97*		*73 - 120*		*12/01/22 08:36*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Client Sample ID: MW-54S_111822

Date Collected: 11/18/22 10:55
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176901-3

Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 120*		*11/29/22 14:05*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 14:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 14:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 14:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 14:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 14:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 14:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 14:33*	*1*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*		*12/01/22 14:33*	*1*
Toluene-d8 (Surr)	*105*		*78 - 122*		*12/01/22 14:33*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 14:33*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Client Sample ID: MW-54_111822
Date Collected: 11/18/22 11:40
Date Received: 11/22/22 09:40

Lab Sample ID: 240-176901-4
Matrix: Water

Method: SW846 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6	J	2.0	0.86	ug/L			11/30/22 23:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 120*		*11/30/22 23:04*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 14:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 14:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 14:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 14:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 14:58	1
Vinyl chloride	0.67	J	1.0	0.45	ug/L			12/01/22 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 14:58*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 14:58*	*1*
Toluene-d8 (Surr)	*104*		*78 - 122*		*12/01/22 14:58*	*1*
Dibromofluoromethane (Surr)	*93*		*73 - 120*		*12/01/22 14:58*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(62-137)	(56-136)	(78-122)	(73-120)
240-176901-1	TRIP BLANK_183	90	97	102	96
240-176901-2	MW-62_111822	91	97	104	97
240-176901-2 MS	MW-62-MS_111822	83	97	105	96
240-176901-2 MSD	MW-62-MSD_111822	83	97	105	96
240-176901-3	MW-54S_111822	89	98	105	95
240-176901-4	MW-54_111822	89	97	104	93
240-176993-F-1 MS	Matrix Spike	84	97	106	95
240-176993-I-1 MSD	Matrix Spike Duplicate	83	97	105	95
LCS 240-554038/4	Lab Control Sample	85	100	105	99
LCS 240-554040/3	Lab Control Sample	84	98	105	95
MB 240-554038/5	Method Blank	93	102	106	103
MB 240-554040/4	Method Blank	89	97	103	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCA
Lab Sample ID	Client Sample ID	(66-120)
240-176901-2	MW-62_111822	101
240-176901-2 MS	MW-62-MS_111822	99
240-176901-2 MSD	MW-62-MSD_111822	104
240-176901-3	MW-54S_111822	107
240-176901-4	MW-54_111822	106
240-177069-E-6 MS	Matrix Spike	97
240-177069-E-6 MSD	Matrix Spike Duplicate	105
LCS 240-553633/3	Lab Control Sample	109
LCS 240-554036/4	Lab Control Sample	108
MB 240-553633/4	Method Blank	102
MB 240-554036/5	Method Blank	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-554038/5
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			11/30/22 23:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			11/30/22 23:42	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			11/30/22 23:42	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			11/30/22 23:42	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			11/30/22 23:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*62 - 137*		*11/30/22 23:42*	*1*
4-Bromofluorobenzene (Surr)	*102*		*56 - 136*		*11/30/22 23:42*	*1*
Toluene-d8 (Surr)	*106*		*78 - 122*		*11/30/22 23:42*	*1*
Dibromofluoromethane (Surr)	*103*		*73 - 120*		*11/30/22 23:42*	*1*

Lab Sample ID: LCS 240-554038/4
Matrix: Water
Analysis Batch: 554038

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	31.5		ug/L		126	63 - 134
cis-1,2-Dichloroethene	25.0	23.4		ug/L		94	77 - 123
Tetrachloroethene	25.0	25.2		ug/L		101	76 - 123
trans-1,2-Dichloroethene	25.0	23.4		ug/L		94	75 - 124
Trichloroethene	25.0	23.2		ug/L		93	70 - 122
Vinyl chloride	25.0	21.6		ug/L		86	60 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*62 - 137*
4-Bromofluorobenzene (Surr)	*100*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-176901-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: MW-62-MS_111822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	1.0	U	25.0	26.9		ug/L		108	56 - 135
cis-1,2-Dichloroethene	1.0	U	25.0	21.4		ug/L		86	66 - 128
Tetrachloroethene	1.0	U	25.0	23.8		ug/L		95	62 - 131
trans-1,2-Dichloroethene	1.0	U	25.0	20.6		ug/L		83	56 - 136
Trichloroethene	1.0	U	25.0	20.6		ug/L		82	61 - 124
Vinyl chloride	0.75	J	25.0	20.3		ug/L		78	43 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-176901-2 MS
Matrix: Water
Analysis Batch: 554038

Client Sample ID: MW-62-MS_111822
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: 240-176901-2 MSD
Matrix: Water
Analysis Batch: 554038

Client Sample ID: MW-62-MSD_111822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	25.0	28.9		ug/L		116	56 - 135	7	26
cis-1,2-Dichloroethene	1.0	U	25.0	21.5		ug/L		86	66 - 128	1	14
Tetrachloroethene	1.0	U	25.0	24.6		ug/L		99	62 - 131	4	20
trans-1,2-Dichloroethene	1.0	U	25.0	20.9		ug/L		84	56 - 136	1	15
Trichloroethene	1.0	U	25.0	21.4		ug/L		86	61 - 124	4	15
Vinyl chloride	0.75	J	25.0	20.5		ug/L		79	43 - 157	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*96*		*73 - 120*

Lab Sample ID: MB 240-554040/4
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			12/01/22 11:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			12/01/22 11:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 11:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			12/01/22 11:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			12/01/22 11:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/01/22 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*62 - 137*		*12/01/22 11:34*	*1*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*		*12/01/22 11:34*	*1*
Toluene-d8 (Surr)	*103*		*78 - 122*		*12/01/22 11:34*	*1*
Dibromofluoromethane (Surr)	*95*		*73 - 120*		*12/01/22 11:34*	*1*

Lab Sample ID: LCS 240-554040/3
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	25.0	29.0		ug/L		116	63 - 134
cis-1,2-Dichloroethene	25.0	22.3		ug/L		89	77 - 123
Tetrachloroethene	25.0	24.5		ug/L		98	76 - 123
trans-1,2-Dichloroethene	25.0	22.0		ug/L		88	75 - 124
Trichloroethene	25.0	21.4		ug/L		86	70 - 122

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-554040/3
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Vinyl chloride			25.0	19.7		ug/L		79	60 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*98*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176993-F-1 MS
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Tetrachloroethene	1.0	U	25.0	24.2		ug/L		97	62 - 131		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*106*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Lab Sample ID: 240-176993-I-1 MSD
Matrix: Water
Analysis Batch: 554040

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrachloroethene	1.0	U	25.0	23.2		ug/L		93	62 - 131	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*62 - 137*
4-Bromofluorobenzene (Surr)	*97*		*56 - 136*
Toluene-d8 (Surr)	*105*		*78 - 122*
Dibromofluoromethane (Surr)	*95*		*73 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-553633/4
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/29/22 03:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*66 - 120*		*11/29/22 03:25*	*1*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-553633/3
Matrix: Water
Analysis Batch: 553633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.98		ug/L		100	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*66 - 120*

Lab Sample ID: 240-176901-2 MS
Matrix: Water
Analysis Batch: 553633

Client Sample ID: MW-62-MS_111822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.1		10.0	12.7		ug/L		107	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 120*

Lab Sample ID: 240-176901-2 MSD
Matrix: Water
Analysis Batch: 553633

Client Sample ID: MW-62-MSD_111822
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.1		10.0	12.5		ug/L		104	51 - 153	2	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 120*

Lab Sample ID: MB 240-554036/5
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/22 21:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*		*11/30/22 21:51*	*1*

Lab Sample ID: LCS 240-554036/4
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			10.0	9.75		ug/L		98	80 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*66 - 120*

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-177069-E-6 MS
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	2.0	U	10.0	10.8		ug/L		108	51 - 153		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 120*

Lab Sample ID: 240-177069-E-6 MSD
Matrix: Water
Analysis Batch: 554036

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.7		ug/L		107	51 - 153	1	16

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 120*

GC/MS VOA

Analysis Batch: 553633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176901-2	MW-62_111822	Total/NA	Water	8260D SIM	
240-176901-3	MW-54S_111822	Total/NA	Water	8260D SIM	
MB 240-553633/4	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-553633/3	Lab Control Sample	Total/NA	Water	8260D SIM	
240-176901-2 MS	MW-62-MS_111822	Total/NA	Water	8260D SIM	
240-176901-2 MSD	MW-62-MSD_111822	Total/NA	Water	8260D SIM	

Analysis Batch: 554036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176901-4	MW-54_111822	Total/NA	Water	8260D SIM	
MB 240-554036/5	Method Blank	Total/NA	Water	8260D SIM	
LCS 240-554036/4	Lab Control Sample	Total/NA	Water	8260D SIM	
240-177069-E-6 MS	Matrix Spike	Total/NA	Water	8260D SIM	
240-177069-E-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D SIM	

Analysis Batch: 554038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176901-1	TRIP BLANK_183	Total/NA	Water	8260D	
240-176901-2	MW-62_111822	Total/NA	Water	8260D	
MB 240-554038/5	Method Blank	Total/NA	Water	8260D	
LCS 240-554038/4	Lab Control Sample	Total/NA	Water	8260D	
240-176901-2 MS	MW-62-MS_111822	Total/NA	Water	8260D	
240-176901-2 MSD	MW-62-MSD_111822	Total/NA	Water	8260D	

Analysis Batch: 554040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176901-3	MW-54S_111822	Total/NA	Water	8260D	
240-176901-4	MW-54_111822	Total/NA	Water	8260D	
MB 240-554040/4	Method Blank	Total/NA	Water	8260D	
LCS 240-554040/3	Lab Control Sample	Total/NA	Water	8260D	
240-176993-F-1 MS	Matrix Spike	Total/NA	Water	8260D	
240-176993-I-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Client Sample ID: TRIP BLANK_183
Lab Sample ID: 240-176901-1
Date Collected: 11/18/22 00:00
Matrix: Water
Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 03:05

Client Sample ID: MW-62_111822
Lab Sample ID: 240-176901-2
Date Collected: 11/18/22 10:00
Matrix: Water
Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554038	CS	EET CAN	12/01/22 08:36
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 12:52

Client Sample ID: MW-54S_111822
Lab Sample ID: 240-176901-3
Date Collected: 11/18/22 10:55
Matrix: Water
Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554040	CS	EET CAN	12/01/22 14:33
Total/NA	Analysis	8260D SIM		1	553633	CS	EET CAN	11/29/22 14:05

Client Sample ID: MW-54_111822
Lab Sample ID: 240-176901-4
Date Collected: 11/18/22 11:40
Matrix: Water
Date Received: 11/22/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	554040	CS	EET CAN	12/01/22 14:58
Total/NA	Analysis	8260D SIM		1	554036	CS	EET CAN	11/30/22 23:04

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP - On Site

Job ID: 240-176901-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

MICHIGAN
190

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Brighton — 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Christina Weaver	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				of COCs
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 248-994-2293	Telephone: 330-497-9396	For lab use only
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time		Walk-in client
Phone: 248-994-2240	Sampler Name: Christian Lizarraldo	TAT if different from below: ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab sampling
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:	10 day		Job/SDG No:
Project Number: 30146655.401.03	Shipping/Tracking No:			
PO # 30146655.401.03				

	Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Analyses: 1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
1	TRIP BLANK_183	—	---		1						1					N	G	X	X	X	X	X	X		1 Trip Blank
2	MW-62_111822	11/18/22	1000		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260B SIM
3	MW-62-MS_111822		1000		6						6					N	G	X	X	X	X	X	X	X	
4	MW-62-MSD_111822		1000		6						6					N	G	X	X	X	X	X	X	X	
5	MW-545_111822		1055		6						6					N	G	X	X	X	X	X	X	X	
6	MW-54_111822	—	1140		6						6					N	G	X	X	X	X	X	X	X	

240-176901 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than ...): ☐ Return to Client ☑ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Christian Lizarraldo	Arcadis	11/18/22 1245	Novi Cold Storage	Arcadis	11/18/22 1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	ARCADIS	11/21/22 0840		EEA	11/21/22 0840
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	EEA	11/21/22		EETDC	11-22-22 940

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Eurofins - Canton Sample Receipt Form/Narrative Login # : 176901
Barberton Facility

Client Arcadis Site Name

Cooler Received on 11-22-22 Opened on 11-22-22

Cooler unpacked by:

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. 2.5 °C Corrected Cooler Temp. 3.2 °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62020 Yes No
17. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

DATA VERIFICATION REPORT

REVISED REPORT: December 12, 2022 REVISION SUMMARY: DVR revised to include ARS table.

Kris Hinskey
Arcadis of Michigan
28550 Cabot Drive
Suite 500
Novi, MI US 48377

CADENA project ID: E203728
Project: Ford Livonia Transmission Plant - ON-SITE -Soil Gas, Ground water and Soil
Project number: 30146655.401.03- onsite groundwater
Event Specific Scope of Work References: Sample COC
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory submittal: 176901-1
Sample date: 2022-11-18
Report received by CADENA: 2022-12-06
Initial Data Verification completed by CADENA: 2022-12-07
Number of Samples:4
Sample Matrices: Water and trip blank
Test Categories: GCMS VOC
Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

There were no significant QC anomalies or exceptions to report.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at http://clms.cadenaco.com/index.cfm.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminates) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Analytical Results Summary

CADENA Project ID: E203728
Laboratory: Eurofins Environment Testing LLC - Barberton
Laboratory Submittal: 176901-1

		Sample Name:	TRIP BLANK_183				MW-62_111822				MW-54S_111822				MW-54_111822			
		Lab Sample ID:	2401769011				2401769012				2401769013				2401769014			
		Sample Date:	11/18/2022				11/18/2022				11/18/2022				11/18/2022			
	Analyte	Cas No.	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier	Result	Report Limit	Units	Valid Qualifier
GC/MS VOC																		
	OSW-8260D																	
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Trichloroethene	79-01-6	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---	ND	1.0	ug/l	---
	Vinyl chloride	75-01-4	ND	1.0	ug/l	---	0.75	1.0	ug/l	J	ND	1.0	ug/l	---	0.67	1.0	ug/l	J
	OSW-8260DSIM																	
	1,4-Dioxane	123-91-1					2.1	2.0	ug/l	---	ND	2.0	ug/l	---	1.6	2.0	ug/l	J